

PROCEEDINGS

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THE DANISH STRATEGY TO PROMOTE SAFE CYCLING

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ENGLISH

THE DANISH STRATEGY TO PROMOTE SAFE CYCLING

One of the targets in the Danish masterplan for transport "Traffic 2005" is to promote cycling and walking in Danish cities and at the same time to improve traffic safety for cyclists and pedestrians as well as for road users in general.

Around 4% of car traffic mileage should be transferred to cycling and walking before 2005. The traffic safety target of the masterplan, in spite of increasing traffic is to reduce the number of persons killed and injured by 45% before the year 2000 with reference to the year 1988. In 1997, the Danish Government published a new national traffic safety strategy "Every accident is one too many". This strategy pays specific attention to the safety of cyclists.

Demonstration projects co-financed by the government have been initiated to demonstrate some examples on how to realize the intentions and targets. In addition, new research activities have been initiated. In 1997, the Ministry of Transport established a Cyclist Forum with the purpose of creating a dialogue among local, regional and state level Road Authorities and the different players involved or related to planning and safety of cycling.

In the spring of 1999, the Ministry of Transport is going to introduce a new national cycling strategy and the Danish Road Directorate will introduce a new handbook for local technicians and planners - a Catalogue of Ideas for recommendable solutions to promote safe cycling.

This paper presents the Danish strategy for promoting safe cycling - including an overview of the policy, activities and experiences so far.

TUESDAY

DEUTSCH

DIE DÄNISCHE STRATEGIE ZUR FÖRDERUNG SICHEREN RADFAHRENS

Eine der Zielsetzungen des dänischen Masterplans für das Verkehrswesen, „Traffic 2005“, besteht darin, den Fahrrad- und Fußgängerverkehr in den dänischen Städten zu fördern und gleichzeitig die Verkehrssicherheit für Radfahrer und Fußgänger sowie für die Straßenbenutzer im allgemeinen zu verbessern.

Etwa 4% der derzeit mit dem PKW zurückgelegten Gesamtstrecke sollen bis zum Jahr 2005 statt dessen zu Fuß oder mit dem Fahrrad bewältigt werden. Das Ziel des Masterplans in puncto Verkehrssicherheit lautet, bis zum Jahr 2000 trotz des steigenden Verkehrsaufkommens die Anzahl der Toten und Verletzten im Straßenverkehr im Vergleich zum Jahr 1988 um 45% zu senken. 1997 hat die dänische Regierung unter dem Titel „Jeder Unfall ist einer zuviel“ einen neuen nationalen Verkehrssicherheitsplan vorgestellt. Dieser Plan legt besonderes Augenmerk auf die Sicherheit der Radfahrer.

Um anhand einiger Beispiele darzulegen, wie die Intentionen und Zielsetzungen in die Praxis umgesetzt werden können, wurden von der Regierung kofinanzierte Demonstrationsprojekte initiiert. Zusätzlich wurden einige neue Forschungsaktivitäten ins Leben gerufen. 1997 gründete das Verkehrsministerium ein Radfahrerforum, um einen Dialog zwischen den lokalen, regionalen und nationalen Straßenverkehrsbehörden und den verschiedenen betroffenen oder mit der Planung und Sicherheit des Fahrradverkehrs befaßten Parteien zu ermöglichen.

Im Frühjahr 1999 wird das Verkehrsministerium eine neue nationale Fahrradstrategie vorstellen, und das dänische Straßendirektorat wird ein neues Handbuch für lokale Techniker und Planungsexperten auflegen - einen Ideenkatalog mit empfehlenswerten Lösungen, die sicheres Radfahren ermöglichen sollen.

Das Referat stellt die dänische Strategie zur Förderung sicheren Radfahrens vor und bietet einen Überblick über bisherige Politik, Aktivitäten und Erfahrungen.

DANSKA STRATEGIJA ZA PROMOCIJO VARNEGA KOLESARJENJA

Eden od ciljev temeljnega danskega načrta za transport "Promet 2005" je promovirati kolesarjenje in hojo v večjih danskih mestih in istočasno izboljšati prometno varnost za kolesarje in pešce, kakor tudi za uporabnike cestišč na splošno.

Okoli 4% z avtomobilom prevoženih razdalj bi bilo treba pred letom 2005 preusmeriti na kolesarjenje in hojo. Prometnovarstveni cilj tega vsesplošnega načrta je, kljub povečanemu prometu pred letom 2000 zmanjšati število umrlih in poškodovanih oseb za 45% (z ozirom na leto 1988). Leta 1997 je danska vlada izdala novo strategijo za prometno varnost v državi "Vsaka nesreča pomeni eno preveč". Ta strategija se še posebej posveča varnosti kolesarjev.

Predstavitveni projekti, ki jih je sofinancirala država, so namenjeni predstavitvi nekaterih primerov, kako realizirati nameravane cilje. Dodatno so bile vzpodbujene nove raziskovalne dejavnosti. Leta 1997 je ministrstvo za promet ustanovilo kolesarski forum z namenom, da se vzpostavi dialog med lokalno, regijsko in državno ravniyo oblasti, ki skrbijo za ceste, ter različnimi predstavniki, ki so udeleženi oziroma povezani pri načrtovanju in varnosti kolesarjenja.

Spomladi 1999 bo ministrstvo za promet vpeljalo novo strategijo kolesarjenja v državi in danska cestna uprava bo predstavila nov priročnik za lokalne tehnike in načrtovalce - katalog idej s priporočljivimi rešitvami za promocijo varnega kolesarjenja.

Referat predstavlja dansko strategijo za promocijo varnega kolesarjenja - vključno s pregledom dosedanjih dejavnosti in

THE DANISH STRATEGY TO PROMOTE SAFE CYCLING

1. CYCLING IN DENMARK - STATISTICS AND DEVELOPMENT

In many ways the bicycle is very suitable for transport in Denmark. The climatic conditions are not extreme, the winters are often mild, and the landscape varies from completely flat to hilly.

Bicycles have been an important part of Danish traffic for more than hundred years and unlike many other countries, increasing car traffic has not entirely replaced the bicycle as an everyday means of transport. It is used by all sectors of society - for work, leisure and on holidays.

The Danish population is around 5.5 million people. The number of bicycles is about 4.5 million, which is almost 2 bikes per household. In Denmark, there are around 1.7 million privately owned cars, which is around 0.7 cars per household. The relatively small number of cars in Denmark is due to the high taxes.

Volume and Modal Split:

Data from the Danish National Travel Survey during 1993-95 shows that cyclists account for more than 20 % of the trips and 5 % of the total person kilometres travelled by persons above the age of 6. On average, every Dane above the age of 6 makes 3 trips a day covering a distance of about 30 km which takes about 1 hour. On average, each Dane cycles 7 minutes and walks 7 minutes a day. About 75% of all cycling trips are less than 3.5 km and about 75 % of all walking trips are less than 1.5 km long. About 38% of all car trips are less than 4.5 km long.

A 1993 travel survey among adults in Danish middle sized cities showed that the cyclists account for 13 % of the total number of person kilometres, pedestrians for 5 % and car drivers for 61 %. Correspondingly, cyclists account for 20 % of the daily trips, pedestrians account for 14 % and car drivers for 54 %.

A 1995 survey of trips to and from work in the metropolitan city of Copenhagen among adult citizens showed that cycling accounts for 34 % of all trips, car-trips for 31% and by public transport for 31%. The last 4 % is by walking. The average cycle trip is almost 7 km long and takes 20 minutes.

Accident Statistics and Developing Trends:

The general development in number of police recorded traffic casualties in Denmark shows a downward trend in the ten year period from 1987 to 1997 for most road users - but for cyclists the reduction seems to be rather limited compared to other road users.

From 1987 to 1997, the total number of police recorded casualties in Danish road traffic has dropped about 20 % from 12 716 to 10 106. In the same period, the number of cyclist casualties has dropped about 9 % from 2370 down to 2153.

During the same time frame the car traffic has increased by more than 40 %.

In urban areas, cyclists account for around 1/3 of all casualties. Almost 2/3 of all cyclist casualties in urban areas take place at urban intersections. Correspondingly, pedestrians account for around 15 % of all casualties in urban areas and around 3/4 of these occur when pedestrians are crossing urban roads.

Risk:

The present situation is that the risk of being 'killed or injured' in traffic is 7 - 8 times higher for cyclists and pedestrians compared to car drivers when the risk is based upon casualties per million person kilometers. A comparison of risk based upon casualties per million trips shows that the difference in risk between car drivers, cyclists and pedestrians is rather small.

6 years and older	Casualties per million person kilometres	Casualties per million trips
Walking	1, 0	1, 7
Cycling	0, 8	2, 4
Private cardrivers	0, 12	1, 9

The general opinion is that the risk for cyclists is very much higher than for car drivers. The calculation of risk is normally based upon casualties related to person kilometers. But a very high part of the kilometers traveled by car is not a realistic alternative to cycling. A more representative comparison of risks could therefore be based upon casualties related to trips or casualties related to person kilometers traveled on trips where the bicycle is a realistic alternative to using the private car.

2. THE DANISH MASTERPLAN FOR TRANSPORT

One of the targets in the Danish masterplan for transport "Traffic 2005" from 1993 is to promote cycling and walking in Danish cities and at the same time to improve traffic safety for vulnerable road users and for road users in general.

Almost half of all car trips in Danish cities are shorter than 3 km. With focus on the short car trips it has been estimated that a transfer of 4 % of car traffic mileage to cycling is a realistic possibility.

The Traffic Safety Target of the masterplan is to reduce the number of persons killed and injured by 45 % before the year 2000 with reference to the year 1988, in spite of increasing car traffic.

3. THE NEW NATIONAL ROAD SAFETY POLICY & ACTION PLAN

During 1995-96 it was realized that the traffic safety situation was not developing according to the road safety target. The target - 45 % reduction of casualties before year 2000 - should be retained, but the strategy should be changed. In 1997, the new national Road Safety Policy & Action plan called "Every accident is one too many" was published by the Ministry of Transport.

The philosophy is comparable to the Swedish "Zero - vision" but by definition is more pragmatic and may be a little bit more realistic. The intention is to say that it is no longer acceptable to look upon road casualties as a natural "unavoidable cost" of increasing road traffic. First, we aim for a reduction of 45 %, but we will not stop there - we will continue - because "every casualty accident is one too many".

The new strategy is to focus on the following four main topics for road safety activities:

Safety of Cyclists, Speed Management, Design of Road Intersections and Reductions of Alcohol Driving.

Traffic safety of vulnerable road users depends on many aspects:

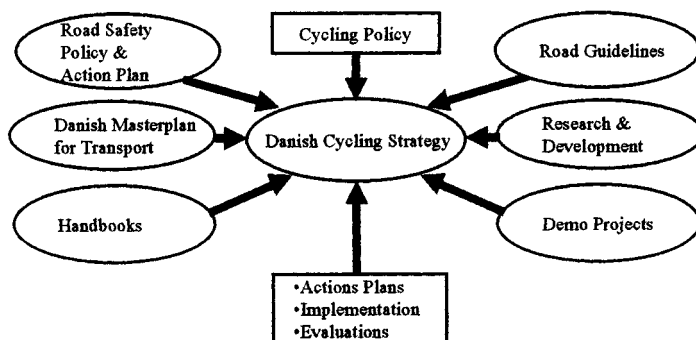
The coherent planning of walking and bicycle networks - including design of road crossings and road sections, road user behaviour, legislation and enforcement, speed management for car traffic, use of safety equipment, education, information and campaigns.

4. THE DANISH CYCLING STRATEGY

The Danish cycling strategy is based on the targets and intentions of the Masterplan for Transport and the National Road Safety Policy & Action Plan. The present Danish Cycling Strategy includes different elements and activities developed in a process over time:

- National cycling policy
- Road guidelines
- Research and development activities
- Handbooks
- Demonstration projects based upon governmental financial support
- Action plans for state level as well as local levels

The Danish Cycling Strategy



4.1 NATIONAL CYCLING POLICY

A paper describing the national cycling policy is developed by the Ministry of Transport in cooperation with the Association of Municipalities and the Association of Councils and will be published during the spring of 1999.

The policy states the fact that it is neither desired nor necessary to "abandon" the car completely, but strengthening the position and importance of the bicycle as a serious daily means of transport is desired in Danish cities for the future.

The need for creating functional, safe and sustainable urban communities for the future is a great challenge we have to face. An increased focus on the qualities and possibilities for the bicycle in urban traffic planning and design will be one important tool among others, to handle this challenge in a successful way. The policy clearly states that promoting safe cycling in Danish cities is needed. The two main reasons for this are:

* The urban environment must be improved.

Improved quality of life for the people living in the cities, the vulnerable road users, social activities and other activities which make a city attractive must have a high priority, together with reduction of all the negative effects from car traffic.

* The health conditions among Danes must be improved.

Physical activity reduces the risk of having various kinds of illnesses.

The main strategy for promoting safe cycling includes the following points:

- Coherent planning and design of cycling networks
- Accessibility and improved comfort for cycling together with restrictions to car traffic are needed
- Safety improvements for cyclists are necessary
- Creation of a strong public engagement with a positive attitude towards cycling is very important.
- Tools are needed. Research based knowledge and recommendations - guidelines and handbooks.
- Local activities must be initiated. Cooperation between road authorities at local, regional and state level together with technical support from state level and financial support for selected demonstration projects from the government are effective catalysts for starting the process.
- Evaluations and follow-up activities are needed for documentation.

4. 2 DANISH ROAD GUIDELINES

Planning and design principles for urban traffic areas, including traffic areas for cyclists and pedestrians, are described in the Danish Road Guidelines. The Danish Road Guidelines are mostly advisory guidelines instead of obligatory standards. The development of guidelines include participation from the different users of guidelines. Thereby, a high degree of consensus is obtained.

The guidelines are a very important fundamental tool for planners and road engineers working with planning and safety of vulnerable road users in urban traffic.

New experiences and research results are continuously collected and included in the current revision of the standards. A new general revised version will be published in 1999.

4. 3 RESEARCH AND DEVELOPMENT

Research based knowledge and development of tools for planning, designing, implementation, and evaluation are needed to set up recommendations for guidelines and handbooks.

A lot of research and development as well as exchange and collection of experiences have been carried out in Denmark for several years. Most of the research carried out has been financed by governmental organisations. The activities have included:

* Planning principles for cycling and walking route networks in urban areas.

The route network for pedestrians and cyclists need to be an integrated part of the general traffic plan of the town. The following requirements must be considered in a coherent planning:

- Safety and security
- Accessibility
- Direct routes
- Connections
- Clearness of lay-out
- Maintenance and quality of surface
- Parking facilities
- Bicycle theft
- Public transport connections



Traffic safety is the most essential of these considerations. The others are important in their own right and contribute to attracting cycle traffic to the route network, and thereby contributing to traffic safety.

* The potential of cycling in Danish cities - focusing modal choices and factors influencing the choice of the bicycle as an alternative mode of transport

* Speed Management and Traffic Calming techniques

* Development and effective evaluations of different stretch elements in walking and cycling networks focussing on planning and design of cycle tracks, cycle lanes and separate cycling paths.

* Development and effective evaluations of intersection elements:

Design and marking of cycling areas at signalised intersections including recessing of vehicle stoplines, blue cycle lane crossings, marking and displacement of cycle tracks/lanes at exit roads, cyclist safety at roundabouts.

* Parking restrictions for cars and parking facilities for bikes

* Use of helmets and visibility measures for cyclists

* Road user behaviour - cyclist speeds and interactions among road users, etc.

4. 4 HANDBOOKS

Available tools and recommendations can be a great help to start and run a process for promotion of safe cycling at local levels. This is why Handbooks are so important. In addition to the guidelines for urban areas, three new Danish Handbooks with emphasis on bicycle traffic should be mentioned here.

Bicycle traffic - Catalogue of Ideas

A lot of important experiences and research based knowledge have been produced over the years. A big part of the information is available in different reports, notes and articles, but a lot of useful experience only exists among practitioners and consultants.

This valuable researched based knowledge and experiences will now be collected in a Catalogue. The purpose is to produce and make available an overview of useful information in the form of a manual for practical use. The catalogue will include good examples and recommendations for coherent planning of cycle route networks, design of infrastructure, construction and maintenance of cycle routes, information and campaigns, etc. A collection of cases showing good examples of solutions relevant for promotion of safe cycling will be included.

The catalogue is made by the Danish Road Directorate - the Research Division of Traffic Safety and Environment - together with the Danish Cyclist Federation, the Technical University of Denmark, and selected local authorities. The catalogue is expected to be published in Danish at the end of 1999 and then translated into English.

Manual for Speed Management

There is a close relationship between vehicle speed and severity of road accidents. If the collision speed exceeds 45 km/h, the likelihood for a cyclist or pedestrian to survive the crash is less than fifty percent. This is why speed management techniques are a fundamental tool for creating a safe traffic system for vulnerable road users.

One of the tasks in the European research project called DUMAS concerns Speed management Techniques. A handbook has been made. The process for planning, designing, implementation and evaluation of a speed management project in a local municipality has been described step by step. The method described in the handbook is very flexible and easy to adapt to local and national conditions. The handbook is published in English.

Manual of Local Road Safety Action Plan

This manual briefly demonstrates how to prepare a local road safety action plan. The purpose is to make it easy for local road authorities to start a process for initiating road safety activities involving all kinds of road users. By setting up a local action plan - and getting political acceptance for it - it is possible to manage and coordinate the different important activities and to involve the many potential players in the process.

4. 5 DEMONSTRATION PROJECTS

Setting up targets and strategies are important for improvement of the traffic safety and promotion of cycling. From demonstration projects it is possible to illustrate how policies and strategies can be transferred into reality.

Evaluation of demonstration projects can bring forth valuable experiences for use in future projects. Another important benefit is the inspiration leading to initiation of other projects elsewhere.

Only when activities are followed-up by evaluation, does it become possible to find out if and to which extent the targets have been reached. A documentation of effects will be the best feed back for politicians and the best way to convince politicians that resources have been used as intended.

In Denmark, we have a long tradition of using governmentally sponsored demonstration projects as a tool for implementing policies and new ideas. Since 1995, ten new Bicycle Demonstration Projects have been initiated by the government, in cooperation with the Danish Road Directorate and local road authorities with the purpose of demonstrating how to promote safe cycling in cities.

In addition, the Ministry of Transport has established a dialogue forum for cycling with the purpose to initiate a continuous discussion and co-operation among all the different players dealing with bicycle traffic.

5. CONCLUSION

The development of a national cycling policy and strategy is important and necessary for the promotion of safe cycling - but it is not enough. A policy paper does not change anything if it stands alone. Other additional activities are highly required.

Research based knowledge and development of tools for planning, marking and design, implementation and evaluation for bicycle traffic are needed to set up recommendations for what needs to be done and how to go about doing it.

It is also important to work out guidelines and handbooks to make it easy for local authorities and practitioners to use the existing knowledge and the tools already developed.

Results depend on action at different levels - state level as well as local levels. Cooperation among the many players dealing with bicycle traffic is necessary. Keeping the dialogue alive at the local levels as well as the national level is important to ensure Bicycle traffic as an issue in the political agenda.

Demonstration projects cofinanced by the government have turned out to be a useful and recommendable tool to initiate local activities. Demonstration projects offer the practical inspiration for others to take action.

A cycling strategy is a process involving many different activities - depending on the cooperation between different players at different levels.

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THE NETHERLANDS BICYCLE TRANSPORT POLICY: THE NEXT PHASE.

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THE NEXT PHASE OF BICYCLE TRANSPORT POLICY IN THE NETHERLANDS

At the end of 1997 the Bicycle Masterplan was wound up after seven years. The Masterplan has managed to give shape to an integral bicycle traffic policy. It could have been bigger and better, but the general conviction is that a lot of useful work has been done.

For the coming phase of the bicycle policy the aims of the Bicycle Masterplan for 2010 are still valid. The new bicycle policy requires renewal, expansion and implementation. Renewal because developments do not stand still. Expansion means harmonizing with other ministries so that transport, including bicycle traffic, is included in their considerations. Implementation means translating knowledge and experience into laws and regulations and stimulating and cooperating with local authorities, county councils, consumer organizations and industry.

DIE NÄCHSTE PHASE DER FAHRRADVERKEHRSPOLITIK IN DEN NIEDERLANDEN

Ende 1997 wurde der Fahrrad-Masterplan nach sieben Jahren Laufzeit abgeschlossen. Mit diesem Masterplan war es gelungen, einer integrierten Fahrradverkehrspolitik Gestalt zu verleihen. Natürlich hätte er umfangreicher und besser sein können, doch ist man allgemein der Ansicht, daß viel Nützliches geleistet wurde.

Für die nächste Phase der Fahrradpolitik gelten immer noch die Zielsetzungen des Fahrrad-Masterplans für 2010. Die neue Fahrradpolitik erfordert Erneuerung, Erweiterung und Implementierung. Erneuerung deswegen, weil die Entwicklung unablässig weiter voran schreitet. Erweiterung bedeutet Abstimmung mit anderen Ministerien, so daß der Verkehr einschließlich des Fahrradverkehrs in deren Überlegungen berücksichtigt wird. Implementierung schließlich bedeutet, Wissen und Erfahrung in Gesetze und Bestimmungen umzusetzen sowie Lokalbehörden, Bezirksverwaltungen, Verbraucherorganisationen und die Industrie anzuregen und mit ihnen zusammenzuarbeiten.

NASLEDNJA STOPNJA POLITIKE KOLESARKEGA PREVOZA NA NIZOZEMSKEM

Ob koncu leta 1997 je bil temeljni kolesarski načrt po sedmih letih poostren. Doslej mu je uspelo oblikovati integralno politiko prometa s kolesi. Ta bi lahko bila še obsežnejša in boljša, vendar splošno mnenje velja, da je bilo postorjeno veliko koristnega dela. Cilji temeljnega kolesarskega načrta za leto 2010 ostajajo tudi za naslednjo stopnjo kolesarske politike. Nova kolesarska politika pa zahteva obnovo, širitev in implementacijo: obnovo zato, ker razvoj ne miruje; širitev pomeni usklajevanje z ostalimi ministrstvi, tako da vzamejo v obzir ves transport, vključno s kolesarskim prometom; implementacija pa pomeni prenašanje znanja in izkušenj v zakone in predpise ter stimuliranje in sodelovanje z lokalnimi oblastmi, okrožnimi sveti, potrošniškimi organizacijami in industrijo.

ENGLISH

DEUTSCH

SLOVENSKO

THE NETHERLANDS BICYCLE TRANSPORT POLICY: THE NEXT PHASE.

During the period 1990 until 1997, the Dutch government bicycle transport policy was shaped into the Bicycle Master Plan (BMP). In 1998, some more BMP activities were completed, and an extensive Dutch-language final report was published. Together with an historical overview of bicycle traffic and bicycle policy since 1870, the main conclusions of this report have been incorporated into an 'international final report', of which English and German language versions will appear in early 1999. Paragraph 5.3 of that report discusses the plans of the Ministry of Transport regarding its future bicycle transport policy. Following is the text of this paragraph.

The following text will not be presented during the conference, but is intended for reading and subsequent discussion.

5.3 FUTURE BICYCLE POLICY

The completion of the Bicycle Master Plan does not mean an end to the Dutch central government's bicycle policy. The assumption that the attention of the central government to bicycle policy will now fade away, in view of the fluctuation in the past, appears justified. The decentralization to provinces and municipalities of elements of the national traffic and transport policy, including bicycle policy, may possibly reinforce that assumption. This also applies to the merging as of January 1, 1996 of the *Contribution Regulation*, the State's means of subsidizing infrastructure for bicycle traffic, with a "Goal Payment", which provinces and municipalities may, in principle, spend freely.

At the present time there is no reason to paint a doomsday picture, with regard to the decentralization of bicycle policy and its accompanying tasks and budgets.

- The decentralization of the government budget for bicycle facilities has had a favourable influence up to now on the availability of funds for bicycle policy. In 1996 and 1997, provinces and municipalities spent 65 million guilders annually from that budget specifically on infrastructure for bicycle traffic, which is considerably more than the approximately fifty million guilders previously made available on an annual basis from the *Contribution Regulation*.
- The decentralization of tasks in the area of traffic and transport to provinces and municipalities provides good opportunities for bicycle traffic. If there are possibilities for strengthening the position of bicycle traffic, they exist on local and regional levels. If the necessity that something needs to be done about the negative aspects of the increase in car ownership and use is recognized anywhere, it is in the cities and villages where residents are confronted with this on a daily basis in their immediate living and working environments. If the bicycle emerges anywhere as a suitable mode of transport for the masses and as the best alternative for numerous short car trips, then it is at a local level, as the majority of these trips are short enough to be made by bicycle.

The decentralization of government tasks and budget to provinces and municipalities does not mean an end to all involvement on the part of the central government in local and regional traffic, nor in bicycle traffic. Decentralization of policy means first and foremost that there are joint responsibilities, whereby the issue is to apportion tasks and roles in such a way that the objectives set can be implemented as efficiently as possible. The intentions regarding this apportionment, as far as traffic and transport are concerned, and regarding the manner of cooperation between the central government, provinces and municipalities were established in March of 1996 in an agreement (the VERDI Agreement). The plans and agreements that were laid down in this document are currently being worked out. In the year 2000 this process should result in a National Traffic and Transport Plan, the successor to the Second Transport Structure Plan.

The central government remains jointly responsible for the following issues in bicycle traffic and policy:

- Stimulating and facilitating;
- Carrying out research and distributing knowledge;
- Supervision: monitoring and benchmarking;
- Preparing legislation and issuing regulations.

On the basis of the experiences gained during the execution of the Bicycle Master Plan it can easily be shown that continuation of the central government's involvement in bicycle policy is desirable.

- Stimulating the making of choices on local and regional levels that lead to "tailor-made transport for every trip purpose" demands a mixture of arguments, which also recognize the value of the bicycle as a mode of transport. The central government can help in formulating and providing this. At the same time, it is important that the State focus, more so now than in the past, on integrated processes and packages of measures, which take the weaknesses and strengths of all modes of transport into consideration.
- Controlling trip lengths will increase the opportunities for bicycle use. This is perfectly in keeping with policy orientated towards improving the accessibility of all sorts of destinations, the quality of life and the environment, traffic safety and public health. Moreover, this leads to fewer emissions of harmful substances, less noise pollution, less energy consumption and takes up less space. Curbing the growth of lengthening trips primarily requires guided spatial policy and gearing this successfully towards transport policy. In doing so, national policy determines the pre-conditions for regional and local governments to a large extent, while simultaneously legitimizing their own policy.
- Large infrastructure projects, such as highways, railways and waterways, cut across underlying road networks, which are often important components of bicycle route networks. To prevent cyclists from having to make unacceptably lengthy detours, the central government should make sure that this criss-crossing leads as little as possible to the erection of barriers.
- Transport management at companies can mean a considerable incentive for bicycle use. The central government can develop the set of instruments necessary for this and stimulate their application.
- By laying down subsidy conditions, the central government can promote public transport that is primarily directed towards offering alternatives to the car and that is not needlessly at the expense of bicycle use.
- Cyclist safety is closely linked to bicycle use and car use. The central government can ensure that in policy and planning for the usage and design of space, mobility and infrastructure traffic safety is taken more into consideration than it has been so far.
- Knowledge of bicycle parking policy and theft prevention is still in its infancy. The central government can contribute to augmenting and dispersing knowledge and experience. In the world of urban planners and traffic experts, the central government can increase awareness of the fact that safe bicycle parking options contribute significantly to more bicycle use.

The central government recognizes its share of the responsibilities for bicycle traffic. This is apparent from, among other things, the coalition agreement of the new cabinet formed in the summer of 1998: "The central government will stimulate bicycle use out of responsibility and support municipalities and provinces."

During the discussion of the final report on the Bicycle Master Plan in a committee from the Lower House on September 1, 1998, the Ministry of Transport, Public Works and Water Management outlined its contribution to future bicycle policy in the Netherlands as follows.

The vertical line: State, provinces, municipalities

A consequence of the VERDI Agreement is the VERDI Knowledge Platform, an information centre with a staff of four and a small working budget. The platform disperses existing knowledge relevant for the implementation of policy by provinces and municipalities. To date research and knowledge distribution has been nearly entirely supervised by the research centre of the Ministry of Transport, but decentralization of tasks and responsibilities demands a better grip on this on the part of provinces and municipalities. The intention here is *to strengthen the Knowledge Platform* in a personnel and financial sense, and to expand its role to one of co-commissioner of the above-mentioned research centre. New knowledge can then also be developed on the basis of the needs of the provinces and municipalities and under the direction of the platform.

Since 1990, a large number of pilot and model projects and innovative activities have been launched, supervised and coordinated by the ministry in the framework of the *SVV-II*, including policy areas other than bicycle traffic. The ministry intends to add a portion of these activities to the list of job responsibilities of the knowledge platform, in order to prevent fragmentation of these tasks among numerous authorities. All of this demands further reinforcement of the platform, partly to disperse knowledge and experience gained.

One of the lessons learned from the seven-year Bicycle Master Plan is that a successful promotion of the interests of bicycle traffic demands just as much of an integral approach at a national level as well as on a regional and local level. The goal of an approach is often expressed in words, though you would be hard pressed to recognize this integral approach on the streets. Moreover, one of the dangers of an integral approach for bicycle traffic is that the subject is ignored, lost, as it were "between a rock and a hard place". This danger is real, as was demonstrated in the period prior to the Bicycle Master Plan and to combat it, the ministry wants to reinforce the contributions of consumer groups to the policy. Specifically, this involves *strengthening the Dutch Cyclists' Union enfb* by adding a work unit with clearly defined tasks. This work unit is to be active on a regional and local level in the area of benchmarking, for example, using instruments developed and data gathered by independent authorities. This unit will also be given a role as a supplier of knowledge and information (of "best practices", among other things) to local and regional parties, i.e. politicians, policy makers, action groups (including the local branches of the Dutch Cyclists' Union) and the people. This unit can also play a role in meeting the demand from abroad for knowledge and information on Dutch bicycle policy and traffic.

The horizontal line: collaboration with other ministries

Collaboration is frequently difficult. Nonetheless, it is important for a traffic ministry to call the attention of other ministries to the consequences of their policy for transport and traffic, and therefore for bicycle traffic. The reason for this is that numerous and extremely divergent policy areas, from economy and spatial planning to education and care of the elderly, to a significant degree influence the "necessity" of people to be mobile and, more importantly, the lengths of trips and their choice of mode of transport. Individuals' options are greatest at a local level, insofar as short trips are concerned. Of all trips made in the Netherlands, 40 per cent are shorter than 2.5 kilometres, that is, walking distance for most people. And 70 per cent of all trips are shorter than 7.5 kilometres, short enough in principle to be cycled by the majority.

Together with the Ministry of Housing, Spatial Planning and Environment, a *project* will be initiated that is temporarily being called "*Short Trips*". Its objective is twofold: an ambitious long-term goal, which would entail wherever possible, combatting the development of gradually longer trips on the one hand, and a short-term goal of promoting alternatives for short car trips on the other. Though it is tempting to address the people for this last-mentioned short-term goal, it is in fact the final link in the intended chain of activities. The first link involves raising awareness at the two initiating ministries of the issues involved, by means for example of executing a number of carefully selected model projects. This awareness can eventually lead to the issuing of new regulations or adaptation of current ones. The development of a "mobility audit" of policy sectors can be important here. Once experience has been gained at the various divisions of the two ministries and a set of instruments have been developed, other (parts of) divisions can be approached. Only after divisions have established the manner in which they are able to influence peoples' options (with regard to the need for mobility, the lengths of trips and the modes of transport and the circumstances surrounding these options) is it relevant to approach the people. In many cases that will probably not take place through a division, but rather through intermediary parties such as provinces, municipalities, interest and consumer organizations, and companies.

Where the lines intersect: The Ministry of Transport

There has been a visible tendency at the ministry in recent years to withdraw to only its primary responsibilities with regard to transport and traffic, i.e. the main infrastructures (road, rail, water and air). In designing a decentralization process, the ministry seemed to want to avoid all semblance of interference in urban traffic. However, this will not lead to the effective and efficient management of the total traffic and transport system. The majority of trips made by individuals begin and end in built-up areas, as do those trips for which the main infrastructures are utilized. All of this argues in favour of more attention, not less, on the part of the ministry to urban and metropolitan traffic, including bicycle traffic. This applies for policy and for the construction and management of the main infrastructures, as well as in the role of the supervisor of regional and local governments as co-executors of national policy.

The 1998 Coalition Agreement reads: "Traffic and transport policy is first and foremost directed towards improving accessibility to and within the medium-size and large cities in our country, whereby the quality of life is also addressed."

IN SUMMARY

Bicycle traffic benefits from integrated policy, a functional division of tasks and roles among, and suitable collaboration between, ministries, provinces and municipalities. The involvement of consumer organizations is desirable in order to guarantee attention to bicycle traffic.

FINAL REMARK

The 'international final report' from which the above text was taken, will be distributed in April 1999. Participants of the Velocity conferences in Basel, Barcelona, Trondheim and Graz will be sent a copy. Further distribution of the German version will take place by bicycle organizations in Germany, Austria and Switzerland. Anyone interested from other countries is invited to contact the author.

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IMPLEMENTING A NATIONAL CYCLING STRATEGY - THE UK EXPERIENCE SO FAR

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IMPLEMENTING A NATIONAL CYCLING STRATEGY - THE UK EXPERIENCE SO FAR

The UK National Cycling Strategy (NCS) was launched in July 1996. It identified a number of key targets and outputs. A National Cycling Forum has been established to encourage and co-ordinate activities that respond to the NCS, and to monitor progress. Expert groups are following up various topics, and delivering effective actions. The topics include Cycle Security, Marketing, Intermodality, Cycling and Road Safety, Cyclists and Lorries, and emerging examples of Best Practice. This paper reviews progress in the light of the UK Government's policies on integrated transport. It discusses those issues likely to arise in taking forward any cohesive plan for generating increases in cycling. These include the need to attract wide political support; tensions between cycling promotion and cyclists' safety; and prioritisation of resources.

UMSETZUNG EINER NATIONALEN FAHRRADSTRATEGIE - BISHERIGE ERFAHRUNGEN IN GROSSBRITANNIEN

In Großbritannien wurde die nationale Fahrradstrategie NCS (National Cycling Strategy) im Juli 1996 gestartet. Sie gibt eine Reihe vorrangiger Zielsetzungen und Ergebnisse vor. Ein nationales Fahrradforum, das National Cycling Forum, wurde ins Leben gerufen, um als Reaktion auf die NCS gesetzte Aktivitäten zu fördern und zu koordinieren und um den erzielten Fortschritt zu verfolgen. Expertengruppen beschäftigen sich mit verschiedenen Themen und erarbeiten effiziente Maßnahmen. Zu den behandelten Themen zählen unter anderem die Sicherheit des Fahrradverkehrs, Marketing, intermodaler Verkehr, Radfahren und Straßensicherheit, Radfahrer und LKW sowie Beispiele für eine „Best Practice“. Das Referat untersucht den erzielten Fortschritt unter Berücksichtigung der britischen Regierungspolitik bezüglich des integrierten Verkehrs. Es werden Fragen beleuchtet, die sich mit einiger Wahrscheinlichkeit stellen werden, während ein kohärenter Plan für eine Steigerung des Fahrradverkehrs umgesetzt wird. Dazu zählen unter anderem die Notwendigkeit, umfassende politische Unterstützung zu gewinnen, das Spannungsfeld zwischen der Förderung des Fahrradverkehrs und der Sicherheit der Radfahrer sowie das Setzen von Prioritäten in Hinblick auf die Ressourcen.

IZVEDBA STRATEGIJE KOLESARJENJA V DRŽAVI - DOSEDANJE IZKUŠNJE V VELIKI BRITANIJ

Državna strategija za kolesarjenje je v Veliki Britaniji stekla julija 1996. Postavila si je številne ključne cilje in rezultate. Ustanovili so nacionalni kolesarski forum, da bi spodbujal in koordiniral dejavnosti, ki ustrezajo omenjeni strategiji, in da bi spremljal napredek. Skupine strokovnjakov sledijo številnim temam in izvajajo učinkovite dejavnosti. Teme vključujejo Varnost koles, Marketing, Intermodalnost, Kolesarjenje in varnost na cesti, Kolesarji in vozniki kamionov ter Primeri, ki so se izkazali za najboljše. Referat daje pregled napredka v luči politike integriranega transporta, kot jo izvaja angleška vlada. Razpravlja o tistih možnih dilemah v zvezi z izvajanjem kakršnegakoli povezovalnega načrta, ki bi pomenil povečanje kolesarjenja. Te dileme vsebujejo potrebo, da bi pritegnile širšo politično podporo; napetosti med promocijo kolesarjenja in varnostjo kolesarjev; ter določitev prednosti resursov.

DEVELOPING AND IMPLEMENTING A NATIONAL CYCLING STRATEGY – THE UK EXPERIENCE SO FAR

INTRODUCTION

This paper reviews progress made in implementing the UK National Cycling Strategy, in the light of new Government policies for integrated transport. It identifies features that have emerged in taking forward cohesive plans for generating increases in cycling. These include the need for wide political support; tensions between cycling promotion and cyclists' safety; and prioritisation of resources.

BACKGROUND

The UK National Cycling Strategy (NCS) was launched in July 1996. It aims to establish a culture favourable to the increased use of bicycles for all age groups; develop sound policies and good practice; and seek out innovative and effective means of fostering accessibility by bike.

The NCS established targets of doubling the amount of cycling in the UK by the year 2002, and doubling it again by 2012. It calls on local authorities to establish their own local cycling plans and targets, consistent with the NCS.

The NCS identified a set of Key Strategic Outputs, intended to stimulate action across a wide spectrum of responsibilities. A National Cycling Forum (NCF) has been set up to encourage and co-ordinate activities that respond to the NCS, and to monitor progress. The NCF has set up expert working groups to follow up a number of topics, and to deliver effective actions. Those topics include Cycle Security, Marketing, Intermodality, Cycling and Road Safety, Cyclists and Lorries, and emerging examples of Best Practice.

PROGRESS

During the 22 years from the publication of the National Cycling Strategy, there has been a change of Government in the UK. It is a measure of the wide spread of political support attracted by the rational and balanced tone of the Strategy that the new Government readily supported it. The Minister responsible for local roads at the Department of the Environment, Transport and the Regions (DETR), Glenda Jackson, has since chaired all meetings of the National Cycling Forum.

Policies are being established and implemented, funding is being released, and mechanisms for identifying priority demands are being overhauled. These can be expected to show through in increases in cycling over the next few years. Some of the early indications are positive, with greater distances being cycled, and more trips being made by bike.

The DETR is undertaking a range of research to support the NCS, and is collaborating with other organisations to improve the understanding of a number of issues. Outputs from investigations of this kind are often published as part of the DETR's series of Traffic Advisory Leaflets, or as NCF leaflets.

THE NEW CONTEXT

A major catalyst to change came in 1998, which has given the National Cycling Strategy a sound context. This was the Government policy publication "A New Deal for Transport: Better for Everyone". It recognised the value of cycling as transport, and the contribution it can make in achieving a range of government policies including: traffic reduction, air quality targets, and public health.

The new policy direction provides clear impetus for work to be undertaken at the local level. It announced additional resources for local transport, and a new system of funding to operate from April 2000. From then local authorities

will be expected to produce local strategies for cycling as part of comprehensive, credible and coherent local transport plans. Elements in this process may involve:

- cycling reviews of the road system and cycle audits of proposed road schemes;
- reallocation of road space to provide more cycle facilities;
- making changes to traffic at signalled junctions and roundabouts in favour of cyclists, giving them priority where this supports cycling;
- applying speed restraint more widely to support their cycling strategies and provide for cyclists when applying speeds restraint measures;
- increased provision for secure parking of cycles;
- better maintenance of cycle lanes and cycle tracks to avoid hazards to cyclists;
- using planning powers to promote cycling through influencing the land use mix, layout and design of development and through the provision of cycle facilities.

OUTPUTS

The links between cycling and health are being strengthened at a strategic level by the DETR and Department of Health, along with the Health Education Authority. As there appeared to be little interface between health promoters and transport practitioners, a working group of the NCF have held two successful seminars which brought these professionals together, to encourage them to identify links and build partnerships. The group is now developing a leaflet aimed at promoting cycling to health service staff, hospital trusts and authorities, local authorities, doctors and other professionals.

Another working group has been very effective in promoting the use of the bicycle in combination with public transport. Much of its initial focus was on identifying improvements to the cycle/rail interface such as better facilities at stations, more accurate and accessible customer information; more on-board provision on new rolling stock. It helped in developing a train operator's charter, and has supported a range of practical measures that have been emerging. These include the CycleMark award scheme, as well as local initiatives. The group is also identifying and drawing together best practice in integrating cycle and bus journeys.

Four leaflets have been produced on cycling in urban areas. Each is aimed at sectors that can help improve conditions for cyclists in urban areas: transport operators, town planners, traffic engineers and retailers. Each leaflet identifies key issues, highlights good practice and draws together useful guidance to encourage adequate provision to be made for cyclists.

Cycle security has been another area for action, where a range of sensible advice has been put together. One result has been 'Stop Them Taking our Bike For A Ride', a leaflet which is available from local Crime Prevention Officers and from the Home Office. A code of practice has been published for commercial operators of cycle registration schemes, a graded system of assessing the effectiveness of cycle security accessories has been agreed, and work is nearing completion on guidance on location and design of cycle parking.

Although there are relatively few accidents between cyclists and HGV drivers, those that do occur are often serious and can be fatal for the cyclist. This prompted another working group to develop a leaflet intended to make HGV drivers, operators and cyclists more aware of each other's needs as road users, and to encourage a more tolerant and caring attitude between them. Copies have been widely circulated to local Road Safety Officers and others. More generally, a safety framework has been established. One of its basic principles is that improvements in road safety and increases in cycling need not be in conflict, a view confirmed in the Government's policy statement on integrated transport.

A marketing strategy has been drawn up, which aims to ensure that the NCS messages are fully understood. The prime target audience has been identified as decision-makers in both the public and private sectors, with a secondary target group being professional interests and institutions. The tertiary target group is the general public.

A new joint cycling and walking group has been set up to recommend actions to help improve professional training and knowledge on cycling and walking. The group includes representatives from professional institutions, universities, training providers and local authorities. Its recommendations are expected to contribute towards the incorporation of cycling and walking within the wider development and planning processes.

Cycle Audit and Cycle Review guidelines have been published following a recommendation of the National Cycling Strategy. Cycle audit procedures apply to planned changes to the road network (ie new schemes); whilst cycle review is designed to

identify the cycle friendliness of existing transport links or networks, and to identify broad ways in which they can be improved to encourage more cycling.

CONCLUSIONS

The NCS is a live strategy, which is subject to regular review and will continue to evolve over time. It has proved so far to be a valuable influence in focussing opinion and presenting a framework for action, through a period when the pace of change has quickened noticeably.

The benefits of the NCS have been to:

- Help secure Ministerial interest in cycling
- Influence the content of the Government's policies and publications
- Encourage the development of local cycling strategies
- Inform the guidance given to local authorities on drawing up Local Transport Plans
- Influence the shape and direction of the DETR's research programme, to provide objective results that further the aims of the NCS
- Provide a focus for co-ordinating publicity campaigns
- Develop a cycle security grading scheme
- Initiate a code of practice for commercial cycle registration schemes
- Publish a number of good practice guides, and set up a register of cycling initiatives
- Stimulate awareness of the potential for developing combined journey options involving bikes and all forms of public transport
- Lead to the publication of Cycle Audit and Cycle Review procedures
- Encourage partnership between organisations in delivering better conditions for cycling
- Influence the way people and organisations view cycling, so that it is seen less as a problem, more a solution.

Cycling now ranks high in the list for attention as a rational component of any sustainable transport system for the future. As a result, a strong demand is being placed on both the public and private sectors to take actions to deliver the conditions that will increase cycling. Many responses and initiatives are already in play and beginning to make their mark. Solid foundations for genuine and lasting growth in cycle use in the UK are now fast translating from a dream into reality.

DISCLAIMER

Views expressed in this paper are the author's, and do not necessarily represent those of the Department of the Environment, Transport and the Regions.

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ELECTRONIC TICKETING OF PUBLIC TRANSPORT AND CYCLE PARKING - A NEW OPPORTUNITY FOR INTEGRATION?

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ELECTRONIC TICKETING OF PUBLIC TRANSPORT AND CYCLE PARKING - A NEW OPPORTUNITY FOR INTEGRATION?

Increasing use is being made of 'smart cards' and 'electronic purses' for a range of activities, including ticketing on buses and trains. This provides an opportunity to use the same technology to provide seamless integration between secure cycle parking and public transport. Is this a real step forward or the unsustainable use of technology to tackle a perceived problem? To answer this question the paper examines the growth in electronic ticketing systems and the opportunity to use the same technology to control cycle parking. It also looks at the overall benefits and costs of such systems and draws conclusions on the long term advantages for encouraging cycling as a feeder to bus and train use.

ELEKTRONISCHE FAHRKARTENSYSTEME FÜR DEN ÖFFENTLICHEN VERKEHR UND FAHRRADABSTELLPLÄTZE - EINE NEUE CHANCE FÜR INTEGRATION?

„Smart Cards“ und „elektronische Geldbörsen“ werden zunehmend für eine umfangreiche Palette verschiedener Anwendungen einschließlich des Fahrkartenverkaufs für Autobus und Eisenbahn genutzt. Dies bietet eine Möglichkeit, dieselbe Technologie zu verwenden, um eine nahtlose Integration zwischen sicheren Fahrradabstellplätzen und dem öffentlichen Verkehr zu gewährleisten. Ist dies ein realer Schritt nach vorn oder ein nicht nachhaltiger Einsatz von Technologie zur Lösung eines identifizierten Problems? Um diese Frage zu beantworten, analysiert das Referat die Zunahme elektronischer Fahrkartensysteme und die Möglichkeit, dieselbe Technologie auch für den Betrieb von Fahrradabstellplätzen einzusetzen. Außerdem betrachtet der Autor das Kosten-Nutzen-Verhältnis derartiger Systeme und zieht Schlüsse bezüglich der langfristigen Vorteile, die eine solche Strategie bieten kann, wenn man die Anfahrt zu Bus und Bahn per Fahrrad fördern möchte.

ELEKTRONSKE KARTICE V JAVNEM PREVOZU IN PRI PARKIRANJU KOLES - NOVA PRILOŽNOST ZA INTEGRACIJO?

Zaradi cele vrste dejavnosti se je povečala uporaba "pametnih kartic" in "elektronskih denarnic", vključno s karticami na avtobusih in vlakih. To daje priložnost za uporabo iste tehnologije, ki bi zagotovila tesno združitev varnega parkiranja koles in javnega transporta. Je to dejanski korak naprej ali neovrgljiva uporaba tehnologije za soočanje s problemom? Z namenom poiskati odgovor, odkriva referat porast sistemov elektronskih kartic in možnost uporabe iste tehnologije za kontroliranje parkiranja koles. Predstavlja tudi splošne prednosti in stroške podobnih sistemov ter izpeljuje zaključke o dolgoročnih prednostih za spodbujanje kolesarjenja kot zunanje povezave z avtobusom in železniškimi linijami.

ELECTRONIC TICKETING OF PUBLIC TRANSPORT AND CYCLE PARKING – A NEW OPPORTUNITY FOR INTEGRATION?

THE SMART CARD EXPLOSION

We take 'smart cards' for granted. A few years ago, before the introduction of credit cards, few of us would have imagined how commonplace they would soon become. Of course 'smart cards' come in different forms. Some have electronically-read magnetic strips or computer chips and are used for credit, banking and other monetary transactions. These are sometimes known as 'open' since they must be available for these transactions at a wide range of locations, sometimes across national borders (e.g. credit cards). However, because of the requirement that their use must be authorised, the cost of on-line confirmation means that their employment for low-cost services is often uneconomic.

Those cards whose use is confined to specific activities are known as 'closed' since their use is restricted (e.g. 'store' cards). These may, however, use similar operating systems for public telephone use, public transport ticketing, access controls or parking systems. Sometimes multiple uses are offered; for example combining car parking and telephone use. Other cards can also offer multiple uses through the inclusion of a cashless 'purse'. These permit payments to be made from sums credited to the card for day to day transactions.

'Sold' to the user on the basis of ease of payment or access to instant credit, smart cards give the issuing operator the ability to monitor use and, in the case of 'store cards', analyse customer purchasing patterns. When added to detailed information about clients and other demographic information, such use becomes an important marketing tool.

CONTACTLESS SMART CARDS AND PUBLIC TRANSPORT

Cards employing magnetic strips or chips are read electronically and have to be in contact with the reading equipment. So-called 'contactless' cards read by radio frequency do not require contact and, in the example of public transport, can provide particular benefits. For high volume operators in densely populated urban areas the ability to read contactless tickets in as little as 400 milliseconds means less delay for the operator and customer alike. These not only result in the expected economies of scale and attendant cost savings; they also provide many additional advantages. For example, electronic control of ticketing permits sales to be made through a wider range of outlets which can be remote from the bus or train station; e.g. telephone sales or passenger operated ticket machines. It can easily offer immediate revenue transfer and, if desired, create the opportunity for the provision of all or part of the sales process by a third party. In addition, ticket fraud can be more tightly controlled and travel patterns more readily monitored. To provide a wider range of services it is possible to add contact chips to contactless cards. This is seen as desirable as the broader the range of services provided the greater the opportunity to reduce the costs of the operating system.

Many examples of electronic ticketing exist for both underground (Metro) and bus services. A measure of the importance being placed on contactless ticketing system can be drawn from the 'Prestige' project recently announced by London Transport. This private finance initiative is reported to be worth £1.4 billion (2 bn Euro) and will be delivered by the TranSys consortium (EDS – advanced business systems and card management, Cubic Corporation – automated fare collection systems, ICL – information technology and WS Atkins – technology based consultants). By making wide use of contactless smart cards for frequent travellers (but with the ability to accept magnetic-strip cards and issue paper tickets), it is intended that this system will make it easier for passengers to use the London Transport network (6 million passenger journeys daily – 3.5 million by bus plus 2.5 million by underground from 250 stations). It is possible that, in the future, this project could form the basis for all integrated public transport through-ticketing across the country. Clearly the introduction of such a system could provide opportunities for many other forms of service delivery.

CYCLE PARKING AND PUBLIC TRANSPORT

Poor cycle security is widely recognised as a deterrent to cycle use and fear of theft can result in poorly maintained bicycles creating a road safety problem for local authorities (1). Nevertheless bicycle use is seen as an important feeder

to public transport (2). The provision of high quality, secure cycle parking can play an important role in encouraging modal transfer from car to bike as part of an integrated transport strategy. Within such a strategy, the use of electronically controlled cycle parking can not only meet the real and perceived needs of a sector of the market for cycle parking; it can also generate revenue to secure the provision and maintenance of such facilities. The self-funding of cycle parking facilities is seen as an increasingly important element of service provision and there is evidence that railway companies see this as a way of maintaining profitability (3).

ELECTRONICALLY CONTROLLED CYCLE PARKING SYSTEMS

Although still in its infancy, the use of electronics to control and monitor the parking of bicycles may be thought of as a natural extension of existing technology to provide increased security. At present four different systems are known to be operating in Europe. Three of these permit use of communal bicycles (Rennes – Adshell, Rotterdam and Portsmouth – Dixon Bate). Such systems offer clear advantages over the traditional 'City-Bike' schemes which, whilst popular, suffer from problems of misuse and theft. The introduction of electronic control and monitoring of use and deposits (often taken against credit cards) offer clear advantages over the traditional projects.

So far these schemes have been confined to relatively small numbers of unique bikes linked to the projects themselves. However, the electronically controlled cycle parking offered for travellers' own bikes at an increasing number of Belgian railway stations (PLS Belgium) serves as a good example of the potential for such systems to be linked to public transport interchanges. This system permits an individual traveller's own bike to be secured in purpose-made stands which are wholly controlled by electronics and the use of an industry-standard contact smart card. Not all of the cycle parking provision at any site is met by electronic control. At present 10% of total provision appears to match customer demand. Experience has shown that all of the secure parking spaces are very quickly taken up. This, perhaps, is an indication that potential demand may be even greater. The manufacturer reports that early research by the rail company suggests that the users of the system are happy with the project. As a result over 2000 parking stands have been installed or ordered in the period May to December 1998. Clearly here is a market ripe for expansion.

THE BENEFITS OF SUCH A SYSTEM MAY BE SUMMARISED AS FOLLOWS:

1. Added security (and peace of mind) for cyclists (in addition to each individual bike stand, access to storage compound can also be controlled by smart card);
2. Secure parking can be provided at sites where the demand does not justify the employment of staff to provide security or other cycle-related services;
3. Where compatible, the use of combined ticketing for travel and cycle parking speeds up service delivery;
4. Electronic control permits monitoring of customer use (permits 'tailoring' of service provision for parking at transport interchanges and city-bike schemes based on actual, rather than perceived, use);
5. Electronic control also permits remote monitoring (by modem) of faults and, if appropriate, service level agreements for maintenance/repair;
6. Capital costs compare favourably with locker systems offering similar security (Note – currently, some electronic parking systems have to be operated under cover);
7. Revenue generation to off-set capital investment and fund up-grades as technology moves forward;
8. Opportunities for long-term 'partnerships' between supplier and operators to reduce set-up capital costs.

WHOLE LIFE COSTS

Taking as an example the equipment employed in Belgium, such a system could be installed for a cost of 400 – 500 Euro per bike parking space. Estimates of maintenance costs are not available, however, the simple yet effective parking mechanism is robustly built to exceed the life of ten-year contracts. Almost entirely constructed from steel, only the comparatively small elements which provide the electronic control and monitoring are not readily recyclable.

CONCLUSION

Public transport providers are increasingly moving towards the use of electronic ticketing to achieve improvements to service delivery and reductions in costs. The provision of complimentary and other services, through the medium of the smart card ticket, will bring both financial and transport modal shift benefits. Enhanced cycle parking security, through the employment of electronic control of parking systems, has the dual benefit of encouraging cycle use as a feeder to public transport (by removing the fears of some potential users) and raising funds to meet the cost of service provision.

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BUSES AND BICYCLES: ALLIES IN THE FUTURE

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BUSES AND BICYCLES : ALLIES IN THE FUTURE

Parisians cyclists societies and the public transport authority have founded a work group formed of cyclists and bus drivers. They tried to identify specific problems arising in different circumstances (bus lanes, cycle lanes, bus stops ...), and to determine the best ways of dealing with the situation. Several work sessions took place during which cyclists were invited to sit like a driver in a bus. The involved bus drivers were also cyclists themselves, so they really had a great knowledge of how it is to drive in heavy traffic situation. These sessions finally led to the writing of a leaflet intended to both cyclists and bus drivers, which contains practical advice on how to ride and to drive in a mutually advantageous way.

BUS UND FAHRRAD: ZUKÜNFTIGE VERBÜNDETE

Die Pariser Radfahrerverbände und die für den öffentlichen Verkehr zuständigen Behörden haben eine Arbeitsgruppe ins Leben gerufen, der Radfahrer und Busfahrer angehören. Diese versuchten, spezifische Probleme zu identifizieren, die in verschiedenen Situationen (Busspur, Radspur, Bushaltestellen ...) auftauchen, und festzustellen, wie die betreffenden Umstände am besten zu meistern wären. Es fanden mehrere Arbeitssitzungen statt, in deren Verlauf den Radfahrern angeboten wurde, im Bus auf dem Fahrersitz Platz zu nehmen. Die teilnehmenden Busfahrer waren selbst gleichzeitig Radfahrer, so daß sie wirklich wußten, wie es ist, bei starkem Verkehr zu fahren. Die Ergebnisse dieser Arbeitssitzungen wurden schließlich in einer Broschüre zusammengefaßt, die sich sowohl an Radfahrer als auch an Busfahrer richtet und praktische Ratschläge bietet, wie sich Radfahrer und Busfahrer zum beiderseitigen Vorteil im Verkehr verhalten sollten.

AVTOBUSI IN KOLESARJE: V PRIHODNOSTI ZAVEZNIKI

Pariška kolesarska društva in oblasti javnega prevoza so ustanovili delovno skupino, ki jo sestavljajo kolesarji in vozniki avtobusov. Hoteli so najti specifične težave, ki se pojavljajo v različnih okoliščinah (avtobusne linije, postajališča...) in poiskati najboljše načine za ravnanje v takšnih situacijah. Imeli so nekaj delovnih sestankov, kjer so povabili kolesarje, da sedijo na prostor voznika avtobusa. Udeleženi vozniki avtobusov so bili tudi sami kolesarji, zato so sami prav dobro vedeli, kaj pomeni voziti v težkih prometnih situacijah. Sestanki so v končni fazi pripeljali do tega, da so napisali snopič tako za kolesarje kot za voznike avtobusov, ki vsebujejo praktične napotke, na kakšen način voziti kolo in avtobus, da bo obojim pomagalo.

BUSES AND BICYCLES : ALLIES IN THE FUTURE

Paris and its region have been facing for many years road traffic congestion, which is linked with the excessive number of cars in the urban area.

Nevertheless, protagonists of the urban life now all agree to try to limitate the use of cars and promote the use of ecological transport. Use of street network should be better shared between each transportation mode. The complementarity between cycling and public transportation may be an interesting alternative to the use of cars.

On one hand, this complementarity appears to be quite obvious with the use of 'bicycle-parks' situated at some suburban stations of RATP's fast regional rail network (RER - Réseau Express Régional). On the other hand, the cohabitation between buses and bikes can lead to some difficulties.

Sharing conventionally the street surface is something quite new for us. Both bus drivers and cyclists had to change some of their habits, which sometimes led to strong critics. In fact both 'communities' were not well prepared to this change. This is the reason why RATP and cycling societies created a work group dedicated to that subject.

THE PARTNERS

The Parisian cycling group MDB (Mouvement Défense de la Bicyclette) was created in 1974 and now has 700 members throughout Paris regional area. The group represents cyclists in different local institutions. MDB also took an important paper in the work started in 1996 by Paris' Mayor, which finally led in the execution of a separated cycling network. A substantial increase of cycling in Paris and its regional area subsequently followed. MDB is also conscious that there are limits in the use of bicycles in town, so the group has been also acting for many years to promote complementarity between bikes and public transport.

RATP operates one of the largest urban public transport network in the world. There are 14 metro lines (urban underground network), 2 RER lines (fast regional rail network), 280 bus lines and 2 tramway lines. There are 9 millions trips done every day. RATP wishes to develop a multimodal approach; this is why it was tried to make real the complementarity between public transport and bicycles. Dealing with those questions was started at the beginning of the 90's, a 'bicycle policy' was then developed. 'Bicycle-parks' were then built at some suburban RER stations, access to the public transport network with bikes has been initiated, the rent of bicycles specially designed to RATP's image has been carried on through the 'Roue libre' process.

THE METHOD USED

Both bus drivers and cyclists decided to meet each other and to create a work group which could try to solve their problems of cohabitation. All the members of this work group are cyclists, some of them being members of the MDB group, the other ones being cyclists' bus drivers who involved themselves in this work group voluntarily. They met several times in a bus depot.

The first part of this work was theoretical, the second part was an 'on-site' activity.

The first phase showed clearly the different ways of driving of the two communities: bus drivers have to subject themselves to drastic driving rules whereas cyclists do not feel so constrained by those rules. A very rich and lively discussion on Paris traffic took place, finally showing that bus drivers mostly all drive the same way, while cyclists drive much more differently : some of them are experimented and some are not, some go fastly and some go slowly, various categories of bikes can be used ...

It was concluded that a unique and clear message on the basic precautions to be taken with buses had to be given to cyclists.

In the second phase, cyclists could sit in a bus like a driver. They became conscious of the view a bus driver really has of bicycles going along his bus. Cyclists were quite surprised to see that the non-visibility areas were not where they originally thought, one of these points being straight on the left of the bus driver. The rear end of the bus -when it swerves- was also considered as an important potential source of danger when the bus turns into another street.

RESULTS

The original goal of these work groups was to produce a document designed to help both bus drivers and cyclists. The document shown here is just designed for cyclists, as bus drivers get a special training on security, which includes precautions to be taken with cyclists.

The final objective is still to produce a shared document for both bus drivers and cyclists. It seems to us that it can be useful to inform cyclists about the training given to drivers on this peculiar topic.



Illustration #1

Front page

"Buses and cyclists both use the street network; both cyclists and bus drivers wish no accident. The single answer is to take care to each other.

Dear cycling friends, please take note of these few advices. You will help bus drivers to respect you better."

**1 Please keep away !**

When a bus turns into a street, its rear end swerves away on approximately 1 m. It may hit you.

2 Please show clear visual signs of what you wish to do and where you wish to go. The bus driver is an human being as you are ... he cannot guess how drivers and cyclists will act.

3 Please hold your right and overtake on the left. Bus lanes are signalled with road signs and often on the pavement itself. The Highway Code still applies there.

4 When you wish to overtake a bus, please do so on the left hand side, and be careful. If you are not protected enough, stay behind the bus and overtake later. The driver cannot see everything with the wing mirror fixed on his bus. He cannot see you when you are just on his side.

5 Please do not cut across in front of the the bus path. Buses are also subjected to car drivers errors. Furthermore, sudden braking or change of direction can lead to heavy injury to passengers.

6 Please avoid to overtake the bus at that moment. When it leaves its stop, the bus indicates it with its left turn signal.

Inside

Illustration #2

CONCLUSION

Even though they are both used to sharing the streets with a great number of cars, cyclists and bus drivers do not feel spontaneously allied :

- the cyclist feels impressed by the massive size of the bus. He generally forgets that the bus driver is a professional drivers (in opposition to general car drivers), and that he is sometimes really protected by him;
- the bus driver is used to drive as close as possible to the sidewalk, the cyclist can sometimes be considered as a trouble for him.

The work carried on by MDB and RATP wishes to create more comprehension between those two communities. In the future, we would like to live in a city with not so many cars, but with much more public transport and bicycles. Sharing of the street network will unavoidably need bus drivers and cyclists to understand and respect each other. This should finally help to have a better quality life in town.

RATP now clearly communicates positively about cycling (the slogan is : La RATP aime le vélo car elle aime la ville qui va avec), which could be explained this way: 'RATP enjoys cyclists, because RATP has the same concepts on how a city should be'.

THE ROLE OF CYCLING INFRASTRUCTURE IN MAKING PUBLIC SHORT-DISTANCE PASSENGER TRANSPORT MORE ATTRACTIVE

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THE ROLE OF CYCLING INFRASTRUCTURE IN MAKING PUBLIC SHORT-DISTANCE PASSENGER TRANSPORT MORE ATTRACTIVE

During the past two years, a document called „Resolution on the Slovenian Traffic Policy” has been drafted in the Republic of Slovenia. Public passenger transport, however, was not properly taken into account until the very last phase of the drafting process. Presently, Slovenia is, on the basis of the above-mentioned document, developing a concept to promote public transport. The role of cycle traffic has so far been neither recognised nor investigated. This paper examines the role of cycling infrastructure as an important factor to make public passenger transport more attractive.

DIE ROLLE DER RADVERKEHRSINFRASTRUKTUR BEI DER ATTRAKTIVIERUNG VON ÖPNV

In der Republik Slowenien wurde in den letzten zwei Jahren das Dokument "Resolution ueber Verkehrspolitik Sloweniens" erarbeitet. Dem Gebiet oeffentlicher Personenverkehr wurde erst in letzter Phase die entsprechende Rolle zugeteilt. Auf Basis dieses Dokumentes wird zurzeit ein Konzept der Forderung von OePV entwickelt. Die Bedeutung des Radverkehrs ist noch nicht erkannt und wurde bisher auch nicht erforscht. Die Rolle des Radverkehrsinfrastruktur als ein wichtiger Faktor der Steigerung der Atraktivitaet des OePV wird im Beitrag naeher betrachtet.

VLOGA KOLESARSKE PROMETNE INFRASTRUKTURE PRI ATRAKTIVIZACIJI JAVNEGA POTNIŠKEGA PROMETA

V Republiki Sloveniji je področje javnega potniškega prometa šele v sklepni fazi izdelave Resolucije o prometni politiki dobilo svoj ustrezeni delež. Na podlagi usmeritev tega dokumenta se intenzivno izdelujejo koncepti razvoja javnega potniškega prometa v Republiki Sloveniji. Pri tem je vloga in pomen kolesarskega prometa povsem zanemarjena in neraziskana. V prispevku so predstavljeni ideje in vloga ureditve kolesarske infrastrukture kot atraktivizacijskega faktorja.

DIE ROLLE DER RADVERKEHRSINFRASTRUKTUR BEI DER ATTRAKTIVIERUNG VON ÖFFENTLICHEN PRESONENNAHVERKEHR

EINFÜHRUNG

In der Republik Slowenien wurde in den Jahren 1995 bis 1997 ein verkehrspolitisches Dokument erarbeitet. Der Auftraggeber war das Verkehrsministerium. Das Dokument wurde von eine Reihe von slowenischen Experten erstellt. Einige Basisuntersuchungen wurden von den ausländischen Konsulenten durchgeführt. Weil das Projekt auch mit PHARE-Mitteln finanziert war, war in der weiteren Phasen der Entwicklung immer ein EU-"Supervisor" dabei. Als Ergebniss ist ein Dokument mit dem Titel "Verkehrspolitik Sloweniens" entstanden (*slow. "Resolucija o prometni politiki Republike Slovenije"*). Dieses Dokument befindet sich derzeit in der parlamentarischen Prozedur. Obwohl seine Anerkennung noch ungewiss ist, bietet das Dokument eine Orientierung. Es zeigt uns, welche verkehrspolitische Massnahmen in der Zukunft in Slowenien bevorzugt werden.

Das Institut für Verkehr (ist an der Fakultät für Bauwesen der Universität in Maribor tätig, die beiden Autoren sind Mitglieder dieses Institutes) war bei der Entstehung oben erwähnten Dokuments nur teilweise und in einen begrenzten Ausmass beteiligt. Das Institut wurde aber doch in einigen verkehrspolitischen Aufgaben involviert. Diese Entwicklungsprojekte wurden auch von Verkehrsministerium beauftragt. Der Auftragnehmer wurde dabei verpflichtet, mit den Zielen der „Verkehrspolitik Sloweniens“ nicht kollidieren. Ein solches Projekt hat sich mit dem öffentlichen

Busverkehr beschäftigt. Als Ergebnis wurde ein Dokument mit dem Titel "Entwicklungsszenarien für den öffentlichen Busverkehr" erarbeitet (slow. "Scenariji razvoja javnega avtobusnega potniškega prometa").

Mit der Erwerbung des Velo-City Kongresses und mit sonstiger Entwicklung des Radverkehrs in der Republik Slowenien (desen Rolle und Popularität nach jahrelangen Rückgang wieder steigt) hat sich ein Nachholbedarf gezeigt. Die beiden oben erwähnten Dokumente müssen und sollen nach ihrer "Radverkhervertäglichkeit" überprüft werden. Das ist das Thema und Ziel dieses Beitrages.

PROBLEMSTELLUNG

Einerseits wurde in der Republik Slowenien das Dokument „Verkehrspolitik Slowenien“ erstellt. Parallel dazu wurde am Institut für Verkehr der Fakultät für Bauwesen in Maribor auch das Konzept für Entwicklung des öffentlichen Personennahverkehr in der Republik Slowenien (im weiteren Text ÖPNV) erstellt. Dieses wurde in oben erwähnter Studie "Entwicklungsszenarien für den öffentlichen Busverkehr" (*Der Titel täuscht, weil es in der Studie eigentlich um eine gemeinsame Entwicklung aller Verkehrsträger geht, ausgehend aber von der jetzigen Situation der Busunternehmen; Bemerkung der Autoren*) zusammengefasst. Die beiden Dokumente, wobei das zweite der Status eines internen Dokumentes des Verkehrsministeriums hat (es ist als ein Handbuch: „Wie soll es weiter gehen“ zu verstehen), haben ein gemeinsames Ziel. Dieses heisst: **"mehr Fahrten mit dem ÖPNV"**.

Die Wege, die zu diesem Ziel führen können, sind aber nicht mehr so konsensuell dargestellt worden.

Die Rolle der Radverkehr ist im Dokument „Verkehrspolitik Slowenien“ entsprechend vertreten; mindestens nach dem Kriterium des Textanteiles... In der ÖPNV-Studie ist der Radverkehr überhaupt nicht betrachtet worden.

Bei der Erstellung beider Dokumente wurde es nicht (oder kaum) an die Zusammenhänge oder Wirkungsabhängigkeiten „ÖPNV - Radverkehr“ gedacht. Eigentlich ist dieses Verhältnis nie diskutiert oder detailliert dargestellt worden.

Es stellen sich also die folgenden Fragen:

1. War das ein Versehen der Autoren ?
2. Haben die zwei Verkehrssysteme wirklich miteinander so wenig zu tun, dass der Zusammenhang vernachlässigt werden kann ?
3. Können die Ziele der Verkehrspolitik (also Verminderung des individuellen Personenverkehrs) durch die Attraktivierung der Wegekette RAD-ZUG bzw. RAD-BUS erreicht werden?
oder konkretisiert:
4. Ist bei dem Einsatz der verkehrspolitischen Massnahme „Ausbau der Radverkehr-Infrastruktur bei der ÖPNV - Haltestellen“ mit einem messbaren Resultat zu rechnen?

ABGRENZUNG DER THEMATIK

Es interessieren uns nur folgende Fahrtzwecke: zur Arbeit und zurück, zur Schule und zurück, Geschäftsreisen, private Erledigungen Einkaufen und zusätzliche Ausbildung. Es interessieren uns nur die erzielten Resultate, deren Anteile auch makro-verkehrspolitisch eine bedeutende Rolle haben! Es werden die Infrastruktur-Massnahmen im breitesten Sinne (Ausbau der Radparkplatzanlagen, fördern der Mitnahme des Rades, Radverleih Anlagen usw.) betrachtet.

DOKUMENT „VERKEHRS POLITIK DER REPUBLIK SLOWENIEN“ - ZUSAMMENFASSUNG

In den Jahren 1995 bis 1997 wurde in der Republik Slowenien ein staatlicher Verkehrskonzept entwickelt und ein Dokument fertiggestellt. Dieses beinhaltet den konzeptuellen Teil und einen generellen Programmteil in der Form einer Liste der Massnahmen. 115 Massnahmen sind aufgelistet worden. Im Konzept ist der Ausbau der Infrastruktur nicht mehr das Hauptthema. Es beschäftigt sich meistens mit dem Management der Verkehrsströme. Es wurde folgendes Zielsystem festgelegt (siehe Tabelle 1, Quelle: [DZRS98]):

Oberziele	Hauptziele
"Keine Staus" - "Kontrolle der Nachfrage"	<ul style="list-style-type: none"> - Minimum der Mobilität - Transitverkehr ? - Abwanderung von ÖPV zum IV stoppen - Vermeiden der unnötigen Verkehr - Kombiniertes Verkehr !
Reduzieren der Verkehrsunfälle	<ul style="list-style-type: none"> - auf Strassen - auf der Eisenbahn - im Luftverkehr - auf Wasser
Reduzieren der Emissionen - Rationalisierung der Raumbenutzung	<ul style="list-style-type: none"> - Reduzieren der Gas- und Lärmemissionen - Recycling der Fahrzeuge - Auswahl der alternativen Verkehrsmittel - gezielte Raumplanung
Neutralisierung der negativen Auswirkungen der Deregulierung und Liberalisierung des Transports	<ul style="list-style-type: none"> - soziale Sicherheit der Arbeitnehmer - Integration der ruralen Gebiete - Integration der demographisch bedrohten Gebiete - Integration der besonderen sozialen Gruppen und Behinderten

Die

TUESDAY

Tabelle 1: Das Zielsystem der Verkehrspolitik Sloweniens (Zusammenfassung)

Maßnahmen, die zur Erfüllung definierten Ziele der Verkehrspolitik führen können und sich direkt mit dem ÖPV beschäftigen, sind in der Tabelle 2 zusammengefaßt.

Maßnahme
Neue Gesetze: Regional- und Gemeindeverkehr
Einführung der "einheitlichen Fahrkarten" und Tarifierung
Nationalfahrplan
Einführung des einheitlichen Informationssystem
Nationalprogramm der Entwicklung von ÖPV
Popularisierung
Direktsubventionen für den ÖPV-Linien, die im öffentlichen Interesse sind
Einführung attraktiverer Umsteigeanlagen
Demotivierung der Benützung von IPV
Änderungen des Fahrkraftliniengesetzes, Harmonisierung mit der EU-Richtlinien
Einführung einer Gesellschaft für ÖPV

Tabelle 2: Die Massnahmen für ÖPV in der "Verkehrspolitik Sloweniens" (Auswahl; Quelle [DZRS98])

Die Maßnahmen, die zur Erfüllung definierten Ziele der Verkehrspolitik führen können und sich direkt mit dem Radverkehr beschäftigen, sind in der Tabelle 3 zusammengefaßt.

Maßnahme
Ausbauprogramm: Rad- und Gehwege
Verbesserung der Bedingungen für Radfahrer und Fussgänger

Tabelle 3: Die Massnahmen für Radverkehr in der "Verkehrspolitik Sloweniens" (Auswahl; Quelle [DZRS98])

Die Maßnahmen, die zur Erfüllung definierten Ziele der Verkehrspolitik führen können und sich direkt mit dem Wegekette Radverkehr beschäftigen, sind in der Tabelle 4 zusammengefaßt (die Tabelle ist natürlich und erwartungsgemäß leer).

Maßnahme

Tabelle 4: Die Massnahmen die Kooperation Radverkehr- ÖPV ansprechen (Auswahl; Quelle [DZRS98])

Die Erstellung der Tabellen 2 bis 4 ist natürlich eine Provokation, weil die „Verkehrspolitik Sloweniens“ doch ein ziemlich allgemeines und prinzipielles Dokument ist. Bei der Verfeinerung der Massnahmen oder bei der indirekten Auswirkungen werden die Radfahrer (und Fussgänger) mehrmals betroffen. Es widerspiegelt aber doch eine Philosophie ...

Die Maßnahmen, die zur Verbesserung der Situation der Benutzergruppe Rad-ÖPNV führen können, zwar indirekt, sind in der Tabelle 5 aufgelistet.

Maßnahme
Popularisierung der ÖPNV (Nr. 22)
Intermodale Knotenpunkte (Nr.26)
Richtlinie – Verkehrsberuhigung (Nr. 53)
Maßnahmen „zur Begrenzung der IPV“ (Nr.98)
usw.

Tabelle 5: Die Massnahmen die Benutzergruppe Rad-ÖPNV indirekt ansprechen (Auswahl; Quelle [DZRS98])

Schlusskommentar: es war nicht leicht, trotz 115 aufgelisteten Massnahmen, diejenige zu identifizieren, die Benutzergruppe Rad-ÖPNV (direkt oder indirekt) ansprechen...

DOKUMENT „ENTWICKLUNGSZENARIOEN FÜR DEN ÖFFENTLICHEN BUSVERKEHR“ – ZUSAMMENFASSUNG

Die oben erwähnten Massnahmen sind doch nur eine ungeordnete Liste. Institut für Verkehr der Fakultät für Bauwesen in Maribor hat diese relativiert, systematisiert und zeitlich und inhaltlich strukturiert. Als Ergebnis wurden folgende Entwicklungsprojekte definiert:

- "ÖPV-Standard und Nachfrage"
- "Einheitlicher Angebot - Verkehrsverbund"
- "Direktion für den ÖPV"
- "Informatisierung"
- "Öffnen des Marktes"
- "ÖPV - Infrastruktur"

Die rechtlichen und finanzierungs Grundlagen und Elemente sind in aller oben erwähnten Projekte integriert (als Säulen) und sind nicht mehr selbständige Projekte. Im Projekt "ÖPV - Infrastruktur" befindet sich ein Spielraum für eventuelle Radverkehrsanlagen.

DIE LAGE IN SLOWENIEN – AM BEISPIEL VON MARIBOR

Im folgenden Kapitel werden direkte Auswirkungen drei Massnahmen beurteilt (es ist eine persönliche Beurteilung beider Autoren; diese wurde zwar mit einer Befragung der Schüler der Handelsakademie in Maribor bestätigt, es wurden aber keine wissenschaftlich begründete Studien durchgeführt). Es werden die Fahrten von Arbeitspendler und Schüler aus der Peripherie ins Stadtzentrum beurteilt.

Variante: Ausbau von Fahrradparkplätze an einer Bushaltestelle/Bahnhof.

Wegekette: Hause - RAD - Bus/Bahn - Zu Fuss

Beurteilung: Die erwünschte umsteigen aus PKW ist kaum zumutbar.

Erreichte Ergebnisse: Es werden die PKW-Fahrten vermeiden, die sowieso als „nicht problematisch“ eingestuft sind.

Variante: Fördern der Möglichkeit eigenes Rad mit zu transportieren.

Wegekette: Hause - RAD - Rad in Zug/Bus - RAD

Beurteilung: Für die Arbeitspendlern sehr begrenzt! Für Busse praktisch unrealisierbar. Für die langen Geschäftsreisen mit dem Zug (z.B. nach Ljubljana) interessant.

Erreichte Ergebnisse: Für die betrachtete Gruppe und Fahrtzwecke ist kaum das Umsteigen aus dem PKW zu erwarten.

Variante: Rad am Bahnhof oder zentralen Bushaltestelle ausleihen

Wegekette: Hause - PKW/Rad/Fuss - Bus/Bahn - RAD

Beurteilung: Die Variante hat die Potenziale die PKW-Fahrer zum Umsteigen zu bringen. Das Parken in der Grosstadt wird immer schwieriger... Die Einführung dieses Konzeptes wird organisatorisch nicht leicht. Die Akzeptanz wird erst in einem gewissen Zeitraum steigen.

Erreichte Ergebnisse: Ist für diejenige, die das Fahrtziel weit weg vom Bahnhof haben (besonders in Maribor, wo der Bahnhof dezentral liegt) eine interessante Ausforderung.

EMPFEHLUNGEN FÜR DIE "IMPLEMENTIERUNG DER VERKEHRSPOLITIK"

Die Verkehrspolitik Sloweniens befindet sich zurzeit in einer Phase der Implementierung. Das heisst im Klartext; das die aufgelisteten Massnahmen strukturiert, präzisiert und gewichtet werden.

Die Empfehlung: bei der Präzisierung der Massnahme: „Ausstattung der ÖPV-Knotenpunkte“; muss besondere Interesse dem Fahrrad (oder motorisiertem Zweirad) gewidmet werden!

SCHLÜSSWORTE

Statt eines Schlusswortes, werden die Fragen, die im Kapitel „Problemstellung“ gestellt sind, beantwortet:

1. War das ein Versehen der Autoren ?

Das war zwar ein Versehen der Autoren, aber kein kapitaales Fehler!

2. Haben die zwei Verkehrssysteme wirklich miteinander so wenig zu tun, dass der Zusammenhang vernachlässigt werden kann ?

In Slowenien können dadurch keine wesentliche Änderungen im Modal-split erzielt werden. Das war aber auch nicht das isolierte Ziel.

3. Können die Ziele der Verkehrspolitik (also Verminderung des individuellen Personenverkehrs) durch die Attraktivierung der Wegekette RAD-ZUG bzw. RAD-BUS erreicht werden?

Das hat zwar ein kleines Entspannungspotenzial in sich. Wesentlicher ist aber die Auswirkung auf die Popularisierung der nichtmotorisierten Mobilität.

4. Ist bei dem Einsatz der verkehrspolitischen Massnahme „Ausbau der Radverkehr-Infrastruktur bei der ÖPNV - Haltestellen“ mit einem messbaren Resultat zu rechnen?

Die Methode ist durchaus finanzierbar. Die Ergebnisse müssen aber im Zusammenhang mit Erholungs- und touristischen Fahrtzwecken betrachtet werden.

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[DZRS98] Resolucija o prometni politiki Republike Slovenije, Poročevalec državnega zbora, Ljubljana 1998

INTEGRATING CYCLING WITH MAINSTREAM TRAFFIC ENGINEERING

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INTEGRATING CYCLING WITH MAINSTREAM TRAFFIC ENGINEERING

The Transport Research Laboratory (TRL) has recently completed a 4-year research project Innovative Cycle Schemes for the UK Government Department of the Environment, Transport and the Regions. This investigated traffic problems faced by cyclists, in urban and rural areas, and ways to improve cycling conditions on the road. These include roundabouts, traffic calming, road works, rural roads, contra-flow cycling, advanced stop lines and routes around pedestrian areas. Research methods include video, accident data analysis, interviews, junction modelling (ARCADY/4) and literature reviews. The research identifies specific traffic engineering measures to improve cycling conditions and suggests principles for providing for cyclists on the road.

Conclusions are also made about driver behaviour, traffic law and other transport policy areas. The research is summarised in TRL report 365.

INTEGRATION DES FAHRRADVERKEHRS MITTELS HERKÖMMLICHER VERKEHRSTECHNISCHER MASSNAHMEN

Das Transport Research Laboratory hat kürzlich ein im Auftrag des britischen Ministeriums für Umwelt, Verkehrswesen und die Regionen durchgeführtes vierjähriges Forschungsprojekt abgeschlossen, das sich mit innovativen Konzepten für den Fahrradverkehr befaßte. Im Rahmen dieses Projekts wurden Verkehrsprobleme analysiert, mit denen sich Radfahrer im städtischen und im ländlichen Bereich konfrontiert sehen, und Möglichkeiten gesucht, um die Verkehrsbedingungen für Radfahrer zu verbessern. Dazu zählen unter anderem Kreisverkehre, Verkehrsberuhigungsmaßnahmen, Straßenbauarbeiten, Straßen in ländlichen Gegenden, Fahrradverkehr gegen die Fahrtrichtung des sonstigen Verkehrs, vorgezogene Haltelinien und Routen um Fußgängerzonen. Zu den angewandten Forschungsmethoden zählen Videoaufnahmen, Unfallsdatenanalysen, Interviews, Kreuzungsmodellierung (ARCADY/4) sowie die Beschäftigung mit relevanter Literatur. Das Forschungsprojekt nennt spezifische verkehrstechnische Maßnahmen zur Verbesserung der Verkehrsbedingungen für Radfahrer und schlägt Grundsätze für die Berücksichtigung des Radfahrers als Verkehrsteilnehmer vor.

INTEGRACIJA KOLESARJENJA Z GLAVNIMI TENDENCAMI PROMETNEGA INŽENIRINGA

Laboratorij za prometne raziskave (TRL) je pred kratkim zaključil štiriletni raziskovalni projekt inovativne kolesarske sheme za oddelek za okolje, transport in regije, ki deluje v okviru britanske vlade. Raziskali so prometne težave, ki jih srečujejo kolesarji v urbanih in podeželskih okoljih, in iskali načine za izboljšanje kolesarskih pogojev na cesti. To vključuje krožna križišča, umirjanje prometa, dela na cesti, podeželske ceste, kolesarjenje v nasprotni smeri prometa, poti okoli peš-con. V raziskovalne metode so bili vključeni: video, analiza podatkov nesreč, intervjuji, modeli križošč (ARCADY/4) in članki iz literature. Raziskava prikazuje specifične postopke prometnega inženiringa za izboljšanje kolesarskih pogojev in predlaga principe, ki bi poskrbeli za kolesarje na cesti.

INTEGRATING CYCLING WITH MAINSTREAM TRAFFIC ENGINEERING

1. INTRODUCTION

The UK Government has clearly stated the priority it attaches to developing an integrated transport policy and the importance of cycling within such a policy. This paper draws on a four year TRL research project, Innovative Cycle Schemes, undertaken for the Department of the Environment, Transport and the Regions (DETR). Key problems for cyclists on the road, and potential means of solving them, were investigated. The purpose was to contribute to a better practical understanding of ways to improve safety and convenience for cyclists through traffic engineering measures. Some of the main findings and conclusions are summarised here. Further details can be found in "Achieving the Aims of the National Cycling Strategy: Summary of TRL Research" (Davies, Emmerson and Gardner, 1998).

2. JUNCTIONS

The majority of accidents involving pedal cyclists occur at or close to junctions. Table 1 gives an indication of the relative risks for cyclists at different junction types. It is clear that some types of junction, particularly some designs of roundabouts, are more hazardous for cyclists.

Table 1. Relative accident risks for pedal cyclists at different junction types

3-arm sites:	Accidents¹	Index²
Signals	137	0.78
T-junctions	95	0.54
Mini-roundabouts	163	0.93
4-arm sites:		
Signals	175	1.00
Crossroads and staggered	177	1.01
Small island roundabouts	785	4.49
Conventional roundabouts	291	1.66
Mini-roundabouts	249	1.42

Table adapted from Kennedy et al (1997)

Notes:

¹ Per 100,000,000 pedal cycle inflows

² 4-arm signal = 1.

2.1 ADVANCED STOP LINES

Advanced stop lines for cyclists (ASLs) allow cyclists to stop ahead of motor vehicles at signalised junctions. Since 1984 ASLs have been installed in the UK at junctions with wide-ranging vehicle flows; most have been operating satisfactorily. Ryley (1996) examined non-nearside approach cycle lanes and the effect of different signal timings on the value of ASLs. He found that a large proportion of cyclists used a nearside cycle lane approach to turn left or continue ahead. Not many used the complete length of the nearside cycle lane up to the stop line to turn right. Some right-turning cyclists used part of the cycle lane and move out before the reservoir; others ignored the cycle lane altogether.

A central cycle lane performs the function of putting cyclists to the right of vehicles in an all-vehicle lane, usually a left-filter lane. Most 'ahead' cyclists at the sites with a central cycle lane used it, compared to very few left-turning and right-turning cyclists. Results showed that an offside cycle lane is useful at sites with more than one all-vehicle lane, a large proportion of left-turning motor vehicles and a large proportion of 'ahead' cyclists. Additionally, there were no visible safety problems for cyclists entering a central cycle lane.

Cyclists can only make full use of the ASL when signals are red; conflicting turning movements tend to occur when the signals are green. Between 28% and 51% of cyclists at the sites arrived at the junction when the signals were green. There was no visible advantage to cyclists of vehicle actuation or SCOOT signal control methods. It is probable that longer cycle times lead to fewer conflicting movements. The main conclusion is that engineers should carefully consider the location of the approach cycle lane and that a nearside lane should is not always the best option.

2.2 ROUNDABOUTS

Whereas ASLs have proved a practical and effective means of assisting cyclists at traffic signals, no such general solution has been found for roundabouts. Most accidents involving cyclists at roundabouts are where the entering driver collides with the circulating cyclist.

Roundabouts are increasingly common in Continental Europe. Morgan (1998a) found that the design of roundabouts in countries where cycling is more prevalent tends to be more "cycle friendly". In particular, the geometry tends to be much "tighter". The capacity of this type of roundabout is less than that of an equivalent-size UK design roundabout.

Davies, Taylor, Ryley and Halliday (1997) used the TRL traffic model ARCADY/3 to assess the potential effects on capacity and accidents of modifying a variety of existing roundabouts to a "Continental" design. The key features of this Continental design are:

- arms that are radial, instead of tangential, to the roundabout centre
- single lane entry and exits (widths 4-5m)
- minimal flare on entry
- an inner circle (central island) of 15-25m diameter
- an external (inscribed circle) diameter of 25-35m
- a circulatory carriageway of 5-7m
- cycles continue to mix with other traffic and normal priorities are retained.

Six roundabouts, with four or five arms, ranging in size from 30m to 90m external diameter, and with total traffic inflows of between 11,000 and 41,000 vehicles in 12 hours, were redesigned, on paper, to Continental design.

ARCADY/3 predicted overall reductions in accidents for 4 sites, no change at 1 site and an increase at 1 site. Generally speaking, entry/circulating accidents (those most affecting cyclists) would fall with Continental design while approach arm accidents (mainly shunts) would rise. This would probably lead to a shift from injury accidents to damage-only accidents and a fall in average casualty severity. The change in accident types, severity and vehicle type involvement may be more appreciable than the overall change in accident numbers. As motor vehicle speeds through the junction would be lower, particularly in the off-peak, and as time spent by cyclists on the (now smaller) roundabout would be less, cyclists would probably also feel safer. It is concluded that for roundabouts with safety problems for cyclists, with total vehicle inflows below 2,500 per hour, modifications to a Continental design may be a useful option.

3. LINKS

3.1 TRAFFIC CALMING - NARROWING THE ROAD

Traffic calming should benefit cyclists in so far as it reduces motor vehicle speeds. Indeed, Hass-Klau (1991) found that it was a more effective way of encouraging cycling than the creation of cycle routes. However, there has been concern amongst cyclists in the UK at the design of some traffic calming features, particularly those that narrow the road. A scheme in Shrewsbury High Street, which narrowed the carriageway, led to a fall in cycling of two thirds (Wheeler, 1999, TRL Report 374). Some schemes now include a cycle "bypass" to help cyclists.

These issues were investigated by Davies, Ryley, Taylor and Halliday (1997). Twenty-eight sites were visited, most with special provision for cyclists. There was considerable variety of design. Some schemes narrowed the road and reduced speeds by redistributing space from motor vehicles to cycles. However, the layouts of some cycle bypasses were difficult for cyclists to negotiate; and some had potential obstacles, including overgrowth, debris and parked vehicles.

Fifteen sites, representing a variety of lane widths and narrowing types, were selected for video filming. It was found that, at the central islands without cycle bypasses, where the running lane width was in the range 3.5m-4.3m:

- Most motor vehicles overtook cyclists at or within 20 metres of the narrowings.

- This did not vary with the traffic running lane width, within this range.
- The gap between the cyclist and the passing motor vehicle was less than that observed in previous studies at unrestricted sites.
- The presence of cycle lanes did not appear to affect the percentage of drivers overtaking cyclists.
- Motor vehicle encroachment into cycle lanes was high at sites where the remaining width for motor vehicles was less than 3m.
- Oncoming motor vehicles did not wait for cyclists but passed them at the narrowing.

Accidents for all vehicles and accidents involving cyclists either fell or stayed the same after installation of the road narrowings. However this was not statistically significant and changes in cycle flows were not available.

Cyclists were interviewed at three sites. Cyclist tended to dislike the narrowing but, sometimes felt that cycling conditions had improved overall. At the narrowing, about one third said that they felt less safe. This varied according to the type of road narrowing. The respondents tended to like the provision of cycle lanes and cycle bypasses, although they expressed reservations about design details. At the schemes where no specific facility for cyclists was provided, most cyclists said that they took extra care or rode 'defensively'. The interviews were carried out at three urban sites with speed limits of 30 mph (48 kph) or less. It is likely that cyclists' concerns would be greater at sites with higher speed limits and traffic flows.

Official guidelines (DOT, 1995; IHT et al, 1996) on the design of road narrowings with regard to cyclists recommend a gap of 4.0-4.5, or providing cycle bypasses. Where cycle bypasses or adequate width cannot be provided due to site constraints, speed reducing measures in advance of the narrowing should be considered.

3.2 CONTRA-FLOW CYCLING SCHEMES

Conventional contra-flow cycling schemes have been operating satisfactorily in the UK for many years. They usually consist of a mandatory contra-flow cycle lane and physical segregation at the entrance and exit. However, these schemes are hard to install as parking must be banned. A study by Ryley and Davies (1998) assessed alternative designs for contra-flow cycling schemes:

- Schemes that do not have a mandatory cycle lane or physical segregation at both ends;
- "False" one-way streets (legally 2-way but cars prevented from entering at one end).

These types of schemes are more widespread in continental Europe than in the UK and evidence from Europe is that they can operate safely (Morgan, 1998b). The schemes were popular with the cyclists using them as they provided convenient routes that were more direct and, in the cyclists' opinions, safer than the alternatives. The introduction of contra-flow cycling increased the total number of cyclists using the streets.

The contra-flow cycling schemes appeared to operate safely. No accidents relating to the contra-flow schemes were recorded at any of sites in after periods ranging from nine months to three years. There was no evidence from video film of cyclists being put in danger by motor vehicles although there were a few cases of cyclists having to wait or squeeze through a narrow gap. Motor vehicle flows and motor vehicle speeds were relatively low at all the contra-flow cycling sites studied, but excessive speed was still a concern to some cyclists. The other main concerns for cyclists travelling contra-flow were vehicles emerging from side roads and visibility at junctions. The study demonstrated that contra-flow schemes can be used in different traffic environments, including sites with narrow streets and kerbside parking.

3.3 ROAD WORKS

About 200 cyclists are injured each year at road works in Great Britain, including some 40 serious or fatal injuries (Davies, Ryley and Coe, 1998). This represents 0.8% of all cyclist accidents and some 5% of all accidents that occur at road works. The road works are not necessarily a contributory factor in all cases. The injury severity for cyclists involved in these accidents is above the average for accidents involving cyclists elsewhere. They are more likely to involve an adult cyclist, to involve a car striking the rear or off-side of the bicycle, or to involve the cyclist hitting an object in the carriageway. The behaviour of drivers and cyclists at five sites was videoed. This showed:

Drivers	overtaking cyclists with minimal passing distance following very close behind cyclists when unable to overtake driving on the footway to pass cyclists
Cyclists	reluctant to accept long delays at temporary signals ignoring temporary diversions and Road Closure signs riding contra-flow or on the footway to avoid narrow lanes or delay

The main conclusion from the research was that the primary safety problem is that drivers attempt to overtake with inadequate width. It is recommended that this should be addressed by more use of lower temporary speed limits and revised guidelines on lane widths, backed by driver education and changes to the Highway Code.

3.4 RURAL ROADS

Problems faced by cyclists on "rural" roads (defined as roads with a speed limit higher than 40 mph (64 kph)), were examined by Gardner and Gray (1997). Rural roads account for 9% of cyclist casualties, but 45% of cyclist deaths. The average severity of cyclist casualties increases with the speed limit, although other factors, eg the percentage of HGVs, are also involved. The problem for local authorities is that there are few clusters of accidents. They tend to be spread out over hundreds of thousands of miles of road, making spot treatment and route treatment difficult and expensive. The apparent relationship between speed limits and accident severity suggests that general reductions in speeds would seem to be the key to reducing the number and severity of casualties. The problems on rural roads indicate that more fundamental measures are required if they are to be widespread, effective and affordable.

4. CONCLUSIONS

1. Improvements can be made by introducing specific cycling facilities such as ASLs. However, it is often difficult to achieve even these limited schemes in the context of traffic growth.
2. Benefits can also be achieved by measures which are not formal cycle facilities, but which are cycle friendly, such as Continental design of roundabouts.
3. To achieve significant improvements, all highway design needs to be made cycle friendly. Mainstream traffic and safety engineers must be fully involved in this process. Cycle Audit procedures (IHT, 1998) should assist here.
4. Basic safety design principles should apply to cycle facilities as they do to other road schemes. For example, ensuring that cyclists are prominently located, where drivers expect to see them. More use of (improved) Safety Audit procedures (IHT, 1996) is needed.
5. Traffic engineering measures, no matter how cycle friendly, cannot remove all problems of traffic danger and unpleasantness. Traffic reduction, speed reduction, education, enforcement and other measures are equally, if not more, important.

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AREA-COVERING OPENING OF ONE-WAY STREETS FOR CYCLISTS AND THE INTRODUCTION OF "BICYCLE ROADS" AS MEANS FOR THE INCREASE OF CYCLING IN THE CITY OF BONN

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TUESDAY

ENGLISH AREA-COVERING OPENING OF ONE-WAY STREETS FOR CYCLISTS AND THE INTRODUCTION OF "BICYCLE ROADS" AS MEANS FOR THE INCREASE OF CYCLING IN THE CITY OF BONN

A new law was released by the way of trial in 1997 which makes it possible for authorities to allow cyclists to use one-way roads in both directions. Furthermore, "bicycle roads" were introduced within the Road Traffic Act (highway code), which are preserved to cyclists but may be used in one direction by motorised traffic if cycle traffic is not disturbed. Due to this new legal situation it should be possible to make the network of bicycle tracks in the cities more attractive.

Because of that Bonn - as one of the first German cities - decided to make surveys concerning all one-way streets and their possible opening for bicycles in both directions by

- introducing "bicycle-roads" with motorised traffic in only one direction,
- or
- opening of one-way roads for cyclists in both directions.

For every single street this survey was made after having defined a detailed catalogue of criteria (volume of traffic, speed limit, width of the traffic lanes, parking, etc.). The necessary means (changing of signs, lay-out of entries and exits at junctions etc.) for the pro bike lay-out of those roads were worked out.

Meanwhile all those works are finished. They verify impressively that about 90% of all one-way streets in the city of Bonn could be opened to cyclists in both directions with small efforts necessary in a short term. Within the next years there are 143 one-way-streets will be opened for cyclists in both directions.

DEUTSCH FLÄCHENDECKENDE ÖFFNUNG VON EINBAHNSTRASSEN FÜR RADFAHRER UND EINRICHTUNG VON FAHRRADSTRASSEN ALS BAUSTEIN ZUR RADVERKEHRSFÖRDERUNG IN DER STADT BONN

Im September 1997 wurde in Deutschland versuchsweise die gesetzlichen Möglichkeiten zur Öffnung von Einbahnstraßen für den Fahrradverkehr entgegen der Einbahnstraßenrichtung geschaffen und die "Fahrradstraße" als zusätzliches Instrumentarium in die Straßenverkehrsordnung aufgenommen. So eröffneten sich neue Möglichkeiten zur fahrradfreundlichen Gestaltung der Einbahnstraßen, welche bisher den Fahrradverkehr stark behinderten.

Daher entschloß sich die Bundesstadt Bonn als eine der ersten Städte Deutschlands zur flächendeckenden Untersuchung aller Einbahnstraßen im Hinblick auf eine Freigabe für Radfahrer im Zweirichtungsverkehr durch

- eine Einrichtung von Fahrradstraßen unter Freigabe einer Fahrtrichtung für den Kfz-Verkehr oder
- eine Öffnung der Einbahnstraßen für Radfahrer entgegen der Einbahnstraßenrichtung

Für jede einzelne Straße wurde diese Untersuchung auf Grundlage eines detaillierten Anforderungskatalogs (Verkehrsmengen, Verkehrszusammensetzung, zulässige Höchstgeschwindigkeit, Fahrbahnbreite, ruhender Kfz-Verkehr, etc.) durchgeführt und die notwendigen Maßnahmen zur fahrradfreundlichen Gestaltung dieser Straßen erarbeitet.

Zwischenzeitlich sind diese Arbeiten abgeschlossen. Sie belegen eindrucksvoll, daß ca. 90 % aller Einbahnstraßen in der Stadt Bonn kurzfristig mit geringen Maßnahmen (Änderung der Beschilderung, Gestaltung von Ein- und Ausfahrtbereichen etc.) für Radfahrer im Zweirichtungsverkehr freigegeben werden können. In den kommenden Jahren sollen daher 143 Einbahnstraßen für Radfahrer in beide Fahrtrichtungen geöffnet werden.

ODPIRANJE ENOSMERNIH CEST ZA DVOSMERNO KOLESARJENJE IN PREDSTAVITEV "KOLESARSKIH CEST" ZA POVEČANJE KOLESARJENJA V MESTU BONN

Ob volitvah 1997 je bil sprejet tudi nov zakon, ki omogoča upravi dopuščanje dvosmernega kolesarjenja na enosmernih cestah. Razen tega so v Uredbi o cestnem prometu vpeljane "kolesarske ceste", ki so rezervirane za kolesarje, v eni smeri pa se lahko uporabljajo tudi za motoriziran promet, če s tem kolesarski promet ni moten. Nova zakonska osnova naj bi naredila kolesarsko omrežje v mestu privlačnejše.

Zato se je Bonn, kot eno prvih Nemških mest, odločil izdelati študijo vseh enosmernih cest in preučiti možnosti za njihovo odpiranje za kolesarjenje v obeh smereh z eno od možnih variant.

Za vsako cesto je bila izdelana raziskava na osnovi podrobnega kataloga kriterijev (prometni volumen, omejitev hitrosti, širina voznih pasov, parkiranje, itd.). Izdelani so bili nujni ukrepi za kolesarsko načrtovane ceste (sprememba znakov, načrtovanje vhodnih in izhodnih križišč, itd.)

Doslej so vsa ta dela že izvedena. Zanimivo je, da je bilo mogoče kar 90% enosmernih cest v Bonnu odpreti za dvosmerni kolesarski promet. Z majhnimi napori in sredstvi ter v kratkem času. V naslednjih letih bo za kolesarjenje v obeh smereh odprtih 143 enosmernih cest.

AREA COVERING OPENING OF ONE WAY STREETS FOR CYCLISTS AND THE INTRODUCTION OF „BICYCLE ROADS” AS MEANS FOR THE INCREASE OF CYCLING IN THE CITY OF BONN

1 THE CAPITAL CITY OF BONN

The city of Bonn is located in the north of the Siebengebirge and in the south of the Kölner Bucht. The city covers an area of 141km²; it has 310.000 inhabitants and it is still the most important politically controlling city within Germany: As capital city there are six ministries and many further institutions of state and the UN, further it is location of the head of telecommunication and center for international co work.

The structure of the population is strongly influenced by the high percentage of employees in the service business (public administration etc.) and the high number of students.

In this 2000-year old city of Bonn, the traffic planning is undergoing a positive development. The promotion of cycling has always been very important as a means of traffic and ecological planning. The main goal of the bicycle traffic policy is the replacement of short car journeys by cycling.

Bicycle traffic is embedded in ecological traffic planning, which is also oriented towards urban planning. By this means an optimal cooperation of pedestrians, bicycle traffic and the unavoidable car traffic should be achieved. The aim of the city is the increase of bicycle traffic over the 13% of the year of 1991.

2 CONCEPT FOR THE SUPPORT OF BICYCLE TRAFFIC

In the year 1995 Bonn became a member of the project „Fahradfreundliche Städte und Gemeinden in Nordrhein-Westfalen“. About 220 km of bicycle paths now exist in Bonn.

To improve the infrastructure of bicycle traffic two steps were taken in advance:

2.1 MAIN TRAFFIC ROADS: SUPPORT OF BICYCLE TRAFFIC BY BUILDING OF BICYCLE LANES AND PROTECTED BICYCLE PATHS.

Often the area of traffic streets is not big enough to build bicycle paths. To ensure clear visible areas for cyclists, in 1992 a protecting line for cyclists was marked on the Meckenheimer Allee (15.000 cars and 9.000 cyclists per day). Because this was a pilot project and there was also little knowledge on this subject in other cities, the effect of the protection line on the traffic was examined scientifically. The following results were observed:

- the protecting line was accepted thoroughly by the car traffic,
- because of the protecting line, conflicts between cars and cyclists could be avoided and the security for cyclists was enhanced,
- the influence of cycle traffic on public transport traffic has clearly decreased.

These positive results lead to the creation of a programme for protecting lines, which was agreed by the city council in 1994. Through this programme, areas for protecting cyclists are created by an alternative use of the car traffic area. Either a protecting line (fig.1) or a bicycle lane (fig.2) are marked on the streets dependently of its size. In case of the bicycle lane the area for car traffic is reduced; in case of the protecting line the marked area can be used by both, car and bicycle traffic.



fig.1 protecting line



fig.2 bicycle lane

Until now most of the programme has been verified. Between 1992 and 1998, protecting lines and bicycle lanes up to a length of 12 km have been built.

Through the contribution of the positive results in the city of Bonn, this kind of marking has become part of the Road Traffic Act in 1997.

2.2 SIDE STREETS: THE PROTECTION OF BICYCLE TRAFFIC IS ACHIEVED BY AN AREA COVERING SPEED LIMIT OF 30 KM/H

After the introduction of cyclist protection on main roads, the city council agreed a programme to increase security of cyclists in side streets. It consists of:

- the transformation of a part of the streets,
- the introduction of a speed limit of 30 km/h throughout all side roads.

Today the whole network of side streets is assigned with a speed limit of 30 km/h.

3 OPENING OF ONE WAY STREETS FOR CYCLISTS IN BOTH DIRECTIONS

In spite of these means to support bicycle traffic severe problems still exist in the pro-bike transformation of the city. Through the historical development of the city many streets are very narrow and became one-way streets during the last few decades. Approximately 180 one way roads, mostly located in the historic town center and in side streets, are an obstacle to direct and fast connections for cyclists.

3.1 POSSIBILITY OF THE OPENING OF ONE WAY ROADS IN BOTH DIRECTIONS FOR CYCLISTS AND THE INTRODUCTION OF BICYCLE ROADS THROUGH THE 24TH AMENDMENT OF THE ROAD TRAFFIC ACT IN 1997

The amendment of the Road Traffic Act, which became law on the 1st September 1997, introduced new laws for the enhanced protection of cyclists and the promotion of bicycle traffic in Germany. Since then it is possible to:

- open one way roads in both directions for cyclists,
- introduce bicycle roads, which are reserved for cyclists but may be used also by car traffic.

As these regulations are temporary, and apply only until end of the year 2000, hard criteria and detailed examinations of the relating one way roads are required. The opening of one way roads to cyclists in both directions is only allowed by law, when

- the use of the one way roads in both directions within the city is necessary for cyclists, following the area covering bicycle traffic plans,
- it is not possible to remove the one way signs,
- the one way road cannot be replaced by other means („false one ways" or building of a separate bicycle path),
- the road is approximately 3,50 m wide (at least 3,00 m, with enough passing place),
- the road is more than 3,50 m wide in case of bus or busy lorry traffic,
- the flow of the traffic can be seen from all directions, especially at junctions or crossings,
- necessary parking space is not affected by the transformations,
- in special cases bicycle channels are available to enter and to exit the one way roads.

3.2 „BONN'S SOLUTION" FOR THE OPENING OF ONE WAY ROADS

As the legal requirements demanded, the committee for ecological and social urban and traffic planning decided to examine all one way roads within Bonn, with a view to the possible opening of the one way roads in both directions. This was carried out by the Stadt- und Verkehrsplanungsbüro Kaulen, Aachen. The following steps were taken:

3.2.1 STATUS QUO OF ALL 187 ONE WAY ROADS

Because of the hard criteria for the opening of the one way roads, each of the one way roads was examined with regard to the following parameters:

streets

- consideration of the urban and functional surrounding (living or business area),
- evaluation of departure and arrival points of bicycle traffic and the current use of the concerned streets,
- quantity of car traffic and percentual part of the different participants (lorries, buses, cyclists etc.),
- speed limit,
- available width of the street and possibility of passing by,
- consideration of parking areas.

junctions

- joining of equal or higher classified streets,
- connection to existing bicycle paths,
- easy overview of junction layout,
- special evaluation of the street width at the junctions because of the need for more area for cars at bends.

3.2.2 CONCEPT FOR ALL 187 ONE WAY ROADS

After the depicted evaluations, for every street a detailed planning concept was developed. The concept considers in detail:

- an examination of possible alternatives to the opening of the one way streets such as, a general opening in both sides for all traffic or the installation of a cycle path in the other direction.
- planning of all necessary measurements, including marking on the road and constructional arrangements to provide a safe opening of the one way roads in both directions.

Depending on the individual function of the streets within the car- and bicycle traffic several different realisations were chosen:

Bicycle roads



fig.3 bicycle road



fig.4 bicycle road

In the case of a high importance of the street for bicycle traffic, but less importance for car traffic, the conversion into a bicycle road was recommended, since on bicycle roads bicycle traffic has priority over car traffic (fig. 3, fig. 4).

Opening of one way streets for cyclists



fig.5 opening of one way street for cyclists



fig.6 opening of one way street for cyclists

In the case of a similar importance of the street for both, car and bicycle traffic, the opening of the one way street in both directions for cyclists (fig. 5, fig. 6) is more efficient.

Concluding all streets were divided in three groups of realisation depending on the kind of the conversion.

4 CONCEPT OF REALISATION

Based on the carried out examinations all conversion plans were carefully checked by the Allgemeinen Deutschen Fahrrad-Club and the police. Afterwards a decision was made by the committee for ecological and social traffic and urban planning of the city of Bonn:

- until the year 2000 the 67 first one way roads will be opened for bicycle traffic in both directions and five streets will be converted to bicycle roads.
- Further the opening of another 76 one way roads and the conversion of three streets into bicycle roads will occur.

The city of Bonn is one of the first cities, which rearranges area covering and consequent all one way roads to provide a „city of short ways“ for cyclists.

As a matter of fact all results of the survey are transferable to further cities and they show impressive the potential of the cities to support bicycle traffic by the opening of one way roads.

"POST ROUTISM"- BETTER CYCLE PLANNING, WITHOUT DEDICATED CYCLE NETWORKS.

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"POST ROUTISM"- BETTER CYCLE PLANNING, WITHOUT DEDICATED CYCLE NETWORKS.

The new enthusiasm for cycling has sometimes resulted in the implementation of some second-rate low-budget schemes. These have developed against a background of deteriorating road conditions for cyclists on much of the remaining unchanged road network.

Post-routism recognising the folly of concentrating on the unattainable ideal of separate cycle networks. Instead it calls for cycle planning which integrates cyclists with other traffic on our existing roads, the roads being made safer where necessary, for all user groups, particularly pedestrians and cyclists.

„POST-ROUTISM“ - BESSERE PLANUNG DES FAHRRADVERKEHRS OHNE SEPARATE RADWEGENETZE

Die neue Begeisterung für das Radfahren hat mitunter zur Umsetzung zweitklassiger Billigkonzepte geführt. Diese wurden vor dem Hintergrund der sich ständig verschlechternden Verkehrsbedingungen für Radfahrer im größten Teil des unverändert verbleibenden Straßennetzes realisiert.

„Post-Routism“ steht für die Einsicht, daß es unsinnig ist, sich auf das unerreichbare Ideal separater Radwegenetze zu konzentrieren. Statt dessen wird eine Planung des Fahrradverkehrs gefordert, die eine Integration des Radfahrers in den restlichen Verkehr auf unseren bestehenden Straßen gewährleistet, wobei die Straßen, auf denen dies erforderlich ist, für alle Benutzergruppen, insbesondere aber für Fußgänger und Radfahrer, sicherer gemacht werden müssen.

"POST-RUTIZEM" BOLJŠE KOLESARSKO NAČRTOVANJE, BREZ POSVEČENIH KOLESARSKIH MREŽ

Novo navdušenje za kolesarjenje je deloma povzročilo implementacijo nekaterih drugorazrednih, nizkoproročunskih shem. Te so se razvile na podlagi poslabšanih cestnih razmer za kolesarje, pri čemer pa se ostalo cestno omrežje ni bistveno spremenilo.

"Post-rutizem" prepozna neumestnost poudarjanja nedosegljivega ideala ločenih kolesarskih mrež. Namesto tega spodbuja takšno načrtovanje, ki združuje kolesarje z ostalim prometom na obstoječih cestah, te pa se na potrebnih mestih napravijo varnejše za vse uporabnike, zlasti za pešce in kolesarje.

ENGLISH

DEUTSCH

SLOVENSKO

"POST ROUTISM" - BETTER CYCLE PLANNING, WITHOUT DEDICATED CYCLE NETWORKS.

WHAT IS POST ROUTISM?

Post Routism is the stage at which many UK local authorities have now arrived, following their new found enthusiasm for cycling in the early 'nineties. It is an acceptance that the most appropriate way to plan for more cycling is to adopt a more holistic approach, rather than concentrate on cycle-routes and cycle-networks.

ROUTISM - THE LEGACY OF THE 'NINETIES NEW ENTHUSIASM FOR CYCLING.

About ten years ago, many of us with an interest in green transport first noticed that the transport planning climate had changed, in recognising that :

- "predict and provide" is dead - we can no longer cater for increased demand for car use, and
- the bicycle is not a safety problem, it is a transport and environmental solution.

Planning for cycling became the domain of the reformed(?) traffic engineer, possibly in partnership with town planners. As municipal engineers we were keen to impose our skills and discipline on the newly emerging field of "providing for cyclists". Almost inevitably in a society dominated by the motor car, many of the professionals charged with bringing about the transport changes, approached the issues from the experience and perspective of a motorist.

We looked at our towns and cities afresh, and thought about how so many trips could be made by bike, if new infrastructure was in place. We drew lines on our maps to link the town's commercial and shopping centres to the residential suburbs, and branches to other major destinations such as railway stations and colleges, with side links to local centres such as shopping parades and sports halls.

Without knowing it, we had become trapped by the concept of Cycle-Routes, Cycle-Networks and "Routism".

WHAT IS WRONG WITH ROUTISM?

Routism is an understandable reaction to the "how do we provide for cyclists?" question. It is acknowledged that many wonderful improvements for cyclists in our towns and cities, have come out of the "routism" approach. Nevertheless, there have also been some disbenefits. Some of our routism solutions, designed and built ten or fifteen years ago, may now be inappropriate, and their need should be reviewed, and the scheme modified or removed if appropriate.

Who likes cycle-routes?

- Mainly non-cyclists! Individuals who don't ride bikes often say that the reason they don't bike is that there is no cycle-route. The provision of a cycle-route will probably not mean that they personally will take up cycling.
- Motorists. Particularly if they have an attitude that cyclists are obstructing their road, and that cycle-routes will take cyclists away, preferably off the road altogether.
- Local Authorities. Particularly if "length of cycle routes" is seen as a measure of "green-ness".
- Inexperienced bike riders. Cycle routes are particularly important to those who have made the decision to take up or return to cycling. They perceive that they will be safer on a cycle-route, and will be prepared to travel further and slower routes, for the perceived benefits.
- Less confident or less fit cyclists. Cyclists that are unconfident about riding in traffic, or cyclists that feel unable to maintain a reasonable pace will find cycle routes more appealing, as they will expect more tolerance from other (motorised) road users if on a designated cycle-route.
- Cycling family groups. If riding in a group you have to consider the limits of the riders with the least ability. Parents out with young children will want to ride slowly and with plenty of room. They will not wish to share space with motor traffic.
- Young adults. They may not have developed the skills to ride in traffic, and the young riders' ability and desire to ride fast and excitingly, may not be matched by the necessary improvements in bike handling skills or experience. Rougher off-road routes may be more attractive to this group and their parents.

Who dislikes cycle-routes?

- Some cyclists. Experienced cyclists used to riding on roads do not like using some cycle routes, particularly if the provision makes journeys longer in distance or time taken. Many experienced cyclists feel that their rights to legally and safely use the road, are threatened by moves to promote cycle-routes, particularly if the routes are shared use

footways. The local cycling community have supported the trend from routism to post-routism.

- Some pedestrians. Particularly if they are affected by shared use footways, which were previously exclusively pedestrian.
- Some motorists. They may dislike cycle-routes if they feel that their road space is being taken away. Cycle-routes are more likely to be unpopular with motorists if space has been reserved on the road exclusively for cyclists, and yet there are few using the cycle-route. Cyclists may be very unpopular if they use the road when a shared use footway has been provided. The motorist may perceive that the cyclist has been given a special facility, and yet chooses to occupy road space to the detriment of those in cars. The motorist is unlikely to have any understanding that the cycle-route may not go where the cyclist wishes to travel, or that the standard of provision for cyclists on the cycle-route is second-rate, making slower inconvenient journeys for those on a cycle.

Hopes for cycle-routes.

Cycle-routes were seen by transport planners as the missing link between a car dominated society, and a future with people pedalling far more for their local journeys. The plans for individual routes formed a town wide cycle-network, beginning a chase to see who could get the best network down on paper. Many of us looked forward to a rosy future when cycling would inevitably increase because we had provided these cycle-routes.

We costed out our cycle-networks, and made bids for funding. Previously unheard of sums for cycle-routes were mentioned, and five year plans were developed. Unfortunately, although investment was greatly increased compared with the levels of the previous 30 years, it was still nothing like enough to make inroads into our proudly presented cycle-networks.

Our five year plans, one quarter funded, became twenty year plans. Instead of a steadily unfolding comprehensive cycle-network, we could only dream about what may be provided by 2020.

Where are all the Colchester cyclists that we are planning for?

In the meantime new cyclists were not appearing on our fragments of cycle-routes that had been funded from the public purse, or from developers keen to show their green credentials on their own developments. In common with many other local authorities, we came to realise that our "routism" approach meant that:

- our under funded network was going to be a series of fragments for the foreseeable future, and, even more importantly,
- these improvements were being implemented against a deterioration of conditions for cyclists almost everywhere else in town.

In addition to the limitations of the infrastructure provided for cyclists

- we had done little to address cyclists, or potential cyclists, concerns about security against theft or vandalism at the trip end,
- society was giving little incentive for people to travel by bike, and yet was continuing to give substantial support through road space allocation and financial rewards to those continuing to use their cars.

No wonder our transport revolution had not taken place!

POST ROUTISM - A BETTER WAY TO PLAN FOR CYCLING.

"Post routism" recognises that cycle-routes are not the panacea solution to encouraging cycling, there is a host of other infrastructure projects needed which could help more, as well as a wide range of social engineering schemes to change peoples' attitudes and lifestyles. The reformed traffic engineer has to accept that he or she is only one of many players working on behalf of the community, and that the cycle-route network dreams may not be very closely related to peoples' transport requirements and aspirations.

The adoption of "post routism" principles means that we are working on a wide range of activities, with a wide cross section of the community, to create better conditions for cyclists.

COLCHESTER CASE STUDY.

My home town is "Britain's Oldest Recorded Town", with a population of 100 000, surrounded by a predominantly rural area with gently rolling countryside. Colchester is an attractive historic town with a moderate climate, with good employment, housing, leisure and shopping. It is about 70 kilometres north-east of London.

Colchester is in the County of Essex, and Colchester Borough Council and Essex County Council work together to develop and implement our transportation policies and proposals.

Car ownership is above the UK average, and in common with much of the UK, Colchester people have high levels of company car provision for employees. The town centre has about 5000 private and 6000 public car park spaces.

Compared with the UK average we have fairly high levels of people using the bus, walking or cycling to town. Reliable information about cycle use is not available, but the 1991 census suggests that about 8% cycle to work, and traffic surveys at busy junctions usually show between 2% and 8% of traffic is cycle traffic.

What is cycling in Colchester like?

Compared with many towns, conditions for cyclists are very good. In addition to a lower speed regime created by lower speed limits and traffic calming, there is a cultural change underway where people are accepting that they should not be driving as fast, and should give more consideration to cyclists and pedestrians.

Colchester urban area has a total of 400 kilometres of roads. A subjective assessment of local conditions is that over 360 kilometres of road, conditions for cyclists are very good or good, as vehicle speeds and volumes are generally low.

- conditions on 30 kilometres of roads are adequate for cycling, as motor vehicle volumes are higher, but not dangerous, and some special facilities for cyclists have been provided.
- at only 10 kilometres of road are cycling conditions poor where there is a poor combination of high traffic flows, relatively high speeds and narrow roads.
- there are no lengths of road where conditions for cyclists are dangerous, although obviously there can be hazards on any road at some time, and there are some places where cyclists should pass with extra care, particularly short sections of busy road, and some large roundabouts.

Although cycling is a minor mode of travel at present, we generally have a good cycling conditions to build upon, and can be pleased that we haven't suffered the reduction in cycling that other some UK towns have experienced.

How Cycle Planning Started in Colchester

Colchester's first cycle planning started in 1980, in accordance with routism principles, when the Highwoods housing area developed. A network of cycle-routes in the residential areas was provided, with paths leading indirectly to the new local shopping centre. In addition a link from the Highwoods area to Colchester town centre was provided.

These cycle-routes comprised of a mixture of high quality new paths shared with pedestrians, together with some lower standard shared use footways next to roads. These routes have been a useful first start in Colchester, but we have now reached the stage where we anticipate removing some of the low standard and unnecessary shared use footways, as all the main roads at Highwoods are designed for 30 miles per hour (mph), and the residential streets are 20 mph design speed.

Where We Are Now on Providing for Cyclists

As the Council's employee most involved in cycling, I am often asked about what we are doing for cyclists. Quite often I am asked about cycle-routes, as these are seen as a measure of how much progress we are making on providing for cyclists. However I would suggest that cycle-routes are a less important facet of Colchester Borough and Essex County Councils' work on provision for cycling.

I am particularly proud to be associated with some pioneering work in the UK on reducing traffic speeds.

- **20 mph urban residential streets.** In 1992 Colchester established one of the UK's first 20 mph zones at Newtown, an old residential area close to the town centre. The speed reduction process is now spreading through more and more of the older neighbourhoods. New developments are being designed for 20 mph.
- **30 mph speed limits in rural villages.** In 1998 we put in 30 mph zones in all 34 rural villages in the area, making some of these villages much more safe and pleasant for those on foot, bike or horse, where previously some motorists had driven at 50 mph or more.
- **Lower speeds on main radial routes, down to 30 mph.** The main roads into Colchester used to be dominated by high volumes of fast moving traffic. These radial routes carried up to 35,000 vehicles a day along roads with 50 or 40 mph speed limits. Although traffic volumes still remain as high, the road conditions are less intimidating than before, and Colchester is accepting the lower-speed culture.
- **Town centre 20 mph zone.** Much of the town centre is a traffic-free zone, however some of the streets continue to take high volumes of traffic. We are following an ongoing programme of schemes to reduce the volumes and speeds

of traffic in the town centre. The High Street has recently been completed as a 20 mph zone, using high quality materials appropriate for a historic street to achieve these safety and environmental objectives.

- **Safe Routes to School.** Colchester was delighted to partner Sustrans, in association with Essex and central government (Department of Environment Transport and the Regions - DETR), to take part in this project to encourage and support young people wishing to make their journey to school by foot or bike. This project, more than any other single initiative, has demonstrated the need for a multi-disciplinary approach if we are to bring about change. It has also shown that infrastructure is only part of the solution, even if it is the first issue that people come to and understand.

Next Stages in Colchester

Although good progress has been made to improve road conditions for vulnerable users, more needs to be done. The current speed reduction measures will need to spread over a wider area and be more firmly applied and enforced. A whole town 20 mph speed zone (except on only very few main roads) may be appropriate in the longer term.

The recent support from DETR has shown that we can expect steady funding for the work we are doing in Colchester, and a series of pro-cycling measures on our main roads will be necessary. This will overcome difficult locations for cyclists, and will be more appropriate for modern cycle planning than promoting circuitous second-rate routes on footways or paths to avoid the problem locations.

The cycle friendly proposals for Colchester should be

- More of the same. A continuation of the traffic speed reduction work and "safe routes to school" project outlined above.
- Better provision for Public Transport. Cyclists and buses can use areas of road reserved for public transport improvements.
- Cycle security. Less secure on-street cycle parking is available; we now need more secure parking in lockers and cycle centres.
- All supported by a raft of incentives to cycle, and a reduction in encouragements to drive cars.

How Successful Have We Been in Colchester?

It is too early to judge the success of our approach in Colchester. There have clearly been local success stories, such as the increase in cycling to the Safe Routes to School site, and the opening of the National Route One through the town. However, many of our busiest locations for cycling are ordinary roads, and we need to guard this position against increases in car traffic, unless motorists' travel habits change. Monitoring of cycle use has only recently started in a professional way, and old data consists of unreliable counts gathered for other purposes.

IS POST ROUTISM FOR YOU?

The 'nineties explosion of cycle-networks is well meaning, but in practice a series of low-budget compromises often results. Our towns and cities already have comprehensive transport infrastructure, with huge networks of roads for all types of traffic, and an even denser system of footways and links primarily for pedestrians.

We must not allow cycle-routism to manoeuvre us towards providing a system of unlinked fragments of cycle-routes, and in the meantime allow our main cycling asset, the ordinary road network, to deteriorate as a place to ride.

A new sense of realism has arrived, about what can be achieved from our urban cycle networks. The folly of concentrating on cycle-routes has led to recognition for POST-ROUTISM cycle planning. Our segregated cycle-network dreams cannot deliver road conditions in our towns and cities to attract that modal shift we are all looking for.

Cycle planners must recognise that even the largest cycle-network plans will only provide for some cycle journeys. Most trips will have an origin or destination on ordinary roads, and for local journeys it is unlikely that it will coincide with a cycle-route. Plan now for a few high quality dedicated cycle-routes through our towns as part of a national network, particularly for novice riders, or those returning to cycling after a long break. However we must recognise that the prime need is to make our existing roads safer for all user groups.

What cyclists really need! A post-routism approach to cycle planning - where cycling is integrated into a safer network of ordinary roads.

DUTCH QUALITY DOCUMENT FOR BICYCLE PARKING SYSTEMS

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TUESDAY

ENGLISH

DUTCH QUALITY DOCUMENT FOR BICYCLE PARKING SYSTEMS

Summary: In 1993 the Dutch Cyclists' Union enfb presented a comparative product study of about 50 different bicycle parking systems. In the study one of the recommendations was to come to an official quality mark. As a follow up of the study the Dutch associations of manufacturers of bicycle parking facilities, Fipavo, was founded. In 1997 was decided to make a quality document, maybe as the first step to an official quality mark or even an European Quality Mark (pr EN). In June 1998 a nine person Steering committee, with representatives of manufacturers, consumer-organisations and buyers of bicycle parking systems, get agreement on the quality document. Bicycle parking systems are improved now according to the document. The first products and the document will be presented in spring 1999.

DEUTSCH

NIEDERLÄNDISCHES QUALITÄTSSICHERUNGSDOKUMENT FÜR FAHRRADABSTELLEINRICHTUNGEN

1993 präsentierte der niederländische Radfahrerverband eine vergleichende Produktanalyse, in der etwa 50 verschiedene Fahrradabstellereinrichtungen untersucht wurden. Eine der Empfehlungen der Studie lautete, ein offizielles Gütesiegel zu entwickeln. Als Reaktion auf die Studie wurde die Niederländische Vereinigung der Hersteller von Fahrradabstellereinrichtungen, Fipavo, gegründet. 1997 wurde beschlossen, ein Qualitätssicherungsdokument zu erstellen, vielleicht als ersten Schritt in Richtung eines offiziellen Gütezeichens oder sogar eines europäischen Gütezeichens (pr EN). Im Juni 1998 erzielte ein neunköpfiger Leitungsausschuß, dem Vertreter von Herstellern, Verbraucherorganisationen und Käufern von Fahrradabstellereinrichtungen angehörten, eine Einigung bezüglich dieses Qualitätssicherungsdokuments. Jetzt werden die Fahrradabstellereinrichtungen diesem Dokument entsprechend verbessert. Die ersten Produkte sowie das Qualitätssicherungsdokument selbst werden im Frühjahr 1999 vorgestellt.

SLOVENSKO

NIZOZEMSKI CERTIFIKAT KVALITETE ZA SISTEME KOLESARSKIH PARKIRIŠČ

Leta 1993 je nizozemska kolesarska zveza predstavila primerjalno študijo izdelkov v približno 50 različnih kolesarskih parkirnih sistemih. Eno od priporočil študije je, da se določi uradna znamka kvalitete. Kot nadaljevanje študije je bila ustanovljena nizozemska zveza izdelovalcev opreme za kolesarska parkirišča Fipavo. Leta 1997 so se odločili, da pripravijo certifikat kvalitete kot prvi korak do uradne znamke kvalitete ali celo evropske znamke kvalitete. Junija 1998 je skupina devetih predstavnikov proizvajalcev, potrošniških organizacij in kupcev kolesarskih parkirnih sistemov sprejela certifikat o kakovosti. Kolesarski parkirni sistemi se zdaj izboljšujejo v skladu s tem certifikatom. Prvi izdelki in dokument bodo predstavljeni spomladi 1999.

DUTCH QUALITY DOCUMENT FOR BICYCLE PARKING SYSTEMS

1. INTRODUCTION

At the start of this year the Dutch Quality Document for Bicycle Parking Systems was presented. Bicycle Parking Systems are constructions in which one can place one or more bicycles, thus providing the bicycle with stability without the need of any other means. In other words we are talking about bicycle stands, racks and suchlike, and not about locked bicycle containers and shelters. There are many different types of bicycle parking systems in the Netherlands; in fact it is estimated that more than 100 different models have been developed. Despite this wide range there has been much debate on the quality of the systems. Frequent points of criticism are: they are not user-friendly, they can damage the bicycle, they lack a facility which can help to lessen the chance of theft or this feature is not effective enough. Back in 1993 a comparative study of Bicycle Parking Systems was carried out on the initiative of the Fietzersbond ENFB (the Dutch Cyclists' Association). For the first time the quality of bicycle parking systems was evaluated systematically. All systems were judged to be unsatisfactory, especially because the study gave high priority to a sturdy anti-theft feature. The 1993 study recommended introduction of a quality mark for bicycle parking systems.

The 1993 study prompted a meeting of the Dutch manufacturers and suppliers of bicycle parking facilities to discuss the results. Not long afterwards the manufacturers and suppliers decided to set up the Fipavo industry association. It is estimated the members of Fipavo account for 90% to 95% of the sector's turnover on the Dutch market.

In the meantime the Fietzersbond ENFB continued to urge for a quality mark. In 1996 this led to the Bicycle Masterplan Working Group of the Ministry of Transport, Public Works & Water Management inviting the Fietzersbond and Fipavo to a discussion on the desirability of an official Quality Mark. Fipavo indicated that although they wished further definition of quality in bicycle parking systems, they were wary of an official quality mark because they could not estimate the (financial) consequences. It was then proposed that as a first step the desired quality of bicycle parking systems should be formulate in a Quality Document for Bicycle Parking Systems. This enables manufacturers to indicate which products meet this quality standard so that buyers know what they are getting. The Fietzersbond and Fipavo developed a proposal for creation of the Quality Document for Bicycle Parking Systems, a consultant was engaged to coordinate the project and the writing of the document and several supplementary studies were carried out by the reputable TNO research institute. The Ministry of Transport, Public Works & Water Management made a major financial contribution to facilitate the project and the members of Fipavo paid the rest of the budget, while the Fietzersbond made a contribution in kind. The project was started in mid-1997.

2. THE CHOSEN APPROACH

Although an officially certified quality mark is not an immediate goal, an approach has been chosen which does not rule this out in the future. Should such a quality mark be desired then the results of the work to date can be used in its development. Manufacturers and buyers of bicycle parking systems must be able to judge for themselves on the basis of the document whether a system meets the Quality Standard. This means that in some cases reliance was not placed on the expert opinion of a recognised research institute, but that rather that requirements and testing methods had to be described very precisely. In this way we hoped to circumvent subjective judgements and panel assessments as far as possible. What is 'user-friendliness' actually, and how can this be objectively defined?

It is vital to establish a Quality Standard with all involved parties, i.e. with product manufacturers, with their customers and with consumer organisations (who represent the users of the systems). A Steering Committee, with representatives of the various interested parties, was established with the task of defining the concrete aspects of the Quality Standard. The committee comprised two members of Fipavo, two representatives of various consumer organisations, a representative of the bicycle industry and various buyers such as NS Netherlands Railways Ltd, a firm of building consultants, a architect and a representative of a large municipality. A broadly based Steering Committee was essential if a good document was to be produced. It was important for manufacturers that the products intended to conform with the Quality Standard can be manufactured at reasonable effort, consumers are able to monitor the user-friendliness and good quality of the systems and buyers, besides the quality concerns, can also monitor all sorts of other practical aspects. The Steering Committee met seven times and conducted intensive discussions in a constructive atmosphere. All parties had to make concessions during this process. Agreement was reached on the last point of dispute in October 1998, after which manufacturers were able to commence development or modification.

The discussions in the Steering Group were fuelled by a working group which supplied draft texts and carried out supplementary research when required. The TNO research institute formed part of this working group.

3. CONTENT OF THE QUALITY DOCUMENT FOR BICYCLE PARKING SYSTEMS

3.1 SUBJECTS OF THE QUALITY STANDARD

A wide variety of considerations play a role in the choice of a bicycle parking system. Requirements have not been defined for all factors; the Quality Standard distinguishes between Quality Criteria and purchase considerations.

Quality Criteria:

- 1 Ease of bicycle placement
- 2 Chance of injury to the user or passers-by
- 3 Chance of damage to the bicycle
- 4 Use limitations for bicycle types and/or bicycle components
- 5 Resistance to vandalism
- 6 Ease of locking up the bicycle
- 7 Sturdiness of the anti-theft facility
- 8 Durability
- 9 Information

There were various reasons why specific requirements were not set for certain aspects. Nevertheless, these considerations can play an important role in the purchase of the product. These purchase considerations include:

Use of space

The Quality Standard sets several requirements which influence the use of space, but the space made available for bicycle parking is viewed as a matter for the road maintenance authority.

Ease of installation

The sale information should indicate how and with which materials a system is to be installed.

Maintenance

The Quality Standard sets out requirements for the durability of a system, but includes no requirements for the removal of dirt and any other maintenance work. This aspect too is left to the buyer.

Design

The design is often an important purchase consideration. No requirements have been set, however, as this criterium cannot be judged objectively.

Environment

It is assumed that these requirements will be covered through the ongoing development of laws and guidelines for production processes and materials. If this is not the case then, as a safety net, it is required that a system and/or the production process should comply with the environmental protection regulations current at the time of production.

Price per bicycle space

This criterium too is often an important purchase consideration. However, the Quality Standard assumes that those buying a system are well able to make a price-quality assessment.

3.2 A FEW PRACTICAL CHOICES

In order to judge whether systems comply with the Quality Standard, four different types of bicycles, including components, were described in detail; these included an ATB and a racing bicycle. A number of tests had to be carried out with these bicycles to assess whether systems comply with the Quality Standard. Children's bicycles are not considered for the time being; the requirement that a system should be suited for both adult's and children's bikes would exclude too many systems. This is currently regarded as an excessively difficult requirement.

Another important point of discussion was whether the user-friendliness criterium should lead to exclusion of so-called

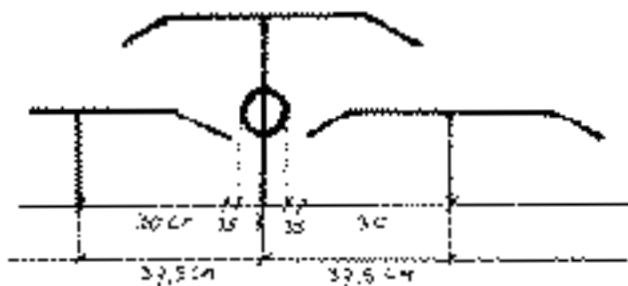
'high-low' systems. It was decided that a system with an internal distance between two positions of minimally 37.5 cm and a height difference between a high position and a low position of 30 cm should satisfy the Quality Standard. This allows, for instance, a low-positioned front lamp to be manoeuvred between two normal handlebars of 60 cm width without the lamp being damaged (see drawing 1). The internal distance between two systems positioned on the same level has been fixed at 65 cm.

Bicycle parking systems installed in public spaces should be provided with a facility which reduces the chance of theft, e.g. by means of a lock-on facility. This is a facility which enables the bicycle to be secured to the bicycle parking system by means of a lock. The criterium of user-friendliness also created the requirement that a lock-on facility at the front should be at least 60 cm high and allow a closed part of the frame to be secured with a medium-sized bow-lock. Such a facility is not required only in cases when a parking area is permanently monitored or bicycles are parked in a separate locked space. The anti-theft facility should be able to resist attacks for at least 1.5 minutes using all kinds of tools employed in practice, e.g. various types of metal saws. This requirement generated the most discussion. Originally the Steering Committee wanted a standard time of 3 minutes. The manufacturers were prepared of their own accord to accept a compromise time of 1.5 minutes, but wondered whether even that was feasible in practice. Even heavy steel pipes or bars can be sawn through in 1.5 minutes. Following a supplementary study of possible choices of materials and handicaps which can occur in practice, the manufacturers agreed to the requirement.

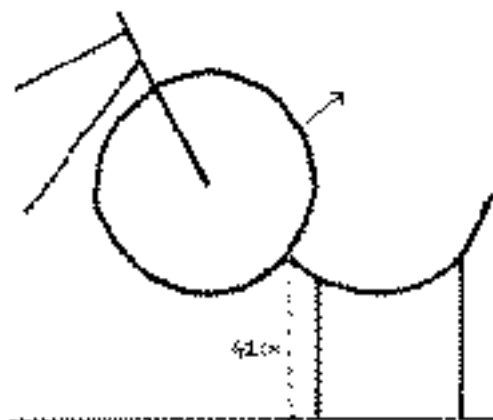
Another dilemma was that several Steering Committee members wanted it to be possible for both the frame and one wheel to be secured. This was only possible if cyclists bought relatively large locks, but many cyclists buy medium-sized locks. It was judged that in many cases it is sufficient to secure a closed section of the frame. This is possible with the large majority of the locks on sale. The information for users will however indicate that it is better to secure the frame and a wheel.

Many dozens of other requirements were formulated. These included the importance of user-friendliness, the maximum number of placement actions (maximally 5), the maximum effort needed for placement (150 N) and all kinds of requirements relating to the durability of a product. Requirements were also set for the product information which is to be supplied to the buyer.

Bicycle stands come in many types and it took considerable work to consider all the aspects and to formulate careful requirements. Ergonomic studies, for instance, had indicated that it was not desirable for the bicycle to be lifted up more than 30 cm. However, in systems where the front wheel can be pushed against a solid support it is possible to attain a greater height with the same effort. The Quality Standard now differentiates between lifting height (30 cm) and threshold height (see drawing 2).



Drawing 1: The distance between two places in an high-lowsystem



Drawing 2: The treshhold height of a wheel system

3.3 PRACTICAL EVALUATION

Application of the norm will mean a major improvement in the bicycle parking systems now on the market in the Netherlands. Nevertheless some concessions have been made, for instance that children's bicycles have not been considered. Stricter requirements for reducing the chance of bicycle theft are also desirable. The preamble to the Quality Standard states that the requirements may be further tightened in a few years' time.

Another aspect is that the Quality Standard is a complex set of requirements. Well-founded technical expertise is needed to assess some requirements and some tests need specially constructed equipment. An average municipal official will not, on his own, be able to judge whether a system really satisfies all the points of the Quality Standard. This requires proper administration of the Standard in order to prevent misuse.

4. HOW WILL THE QUALITY STANDARD BE APPLIED?

The initiators of the Quality Standard, Fipavo and the Fietzersbond ENFB, have decided to jointly administer the Standard. To this end they have set up the 'Fietsparkeur' Foundation (a Dutch play on words). Bicycle parking systems which satisfy the Quality Standard may carry a logo (see the poster in Graz). This logo will mainly be used in the documentation. A contract will be concluded with the manufacturer of each bicycle parking system which complies with the Standard, setting out the obligations which the manufacturer must satisfy together with a penalty provision and a dispute settlement procedure. A once-only registration fee must be paid for each product which satisfies the Standard, together with an annual sum. Members of Fipavo pay a lower registration fee (as they have invested in creation of the Quality Standard). In this way the Foundation should become self-financing within a few years. The Foundation is soon to set up a broadly based Advisory Council which will issue verdicts on concrete discussion points and, if necessary, update or supplement the Quality Standard.

A communication plan has been drawn up to inform the public about the Standard. An official presentation will take place at the launch of the Standard which will aim to generate maximum publicity, both in the general media and in many different specialist journals. One difficult aspect is that there are many different buyers of bicycle parking systems: municipalities, public transport companies, owners of public buildings and recreational facilities, schools, employers. Sometimes it is the owners of buildings who are the decision-makers, but sometimes these are consultants and architects. An effective method of reaching all these potential buyers is to enclose information about the Quality Standard together with documentation sent by the manufacturers. When the time comes for someone to purchase a system, they already have information about the Standard. In order to ensure that the significance of the Standard is generally recognised, all the various (umbrella) (government) institutions and organisations have been asked to support the Standard and to make their logos available for publicity purposes. Various organisations have already agreed to this at the time of writing while others are still consulting on the matter. Through a broad base of support for the Quality Standard it must gain a degree of credibility which municipalities etc. cannot ignore.

In principle it would be better only to grant the quality mark to products which have been approved by an independent Research institute. However, such an approval process is fairly expensive. Since higher quality and thus more expensive bicycle parking systems currently only form a relatively small part of the market, manufacturers are unwilling to incur such costs. On the other hand, with the new Quality Standard and the 'Fietsparkeur' quality mark we have initiated a shift towards this more expensive end of the market. If this succeeds then investment in an independent certification may become a viable option. This would in turn also grant further authority to the 'Fietsparkeur' quality mark. In fact, if manufacturers have doubts whether their product satisfies the Standard they can already have such a certification process conducted on a voluntary basis.

5. CLOSING REMARKS

The Quality Standard has been launched; now we have to wait and see what the effects are. We will have to establish whether all aspects have indeed been considered within the Standard and whether it enables manufacturers to develop good products. Furthermore, it will become clear whether customers actually buy the (more expensive) products, thus creating a quality improvement in practice. If the Quality Standard proves effective then it is possible that an official certification will follow in a number of years. An independent certification and regular re-certification will then form part of the process. In the course of time an official European standard might also be established.

SINKING BICYCLE RACK - CycloRACK**Simon Eržen**

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All authors are students at the University of Maribor, Faculty of Mechanical Engineering, Industrial Engineering program, Maribor, Slovenia - studying 7th term of 9 terms.

SINKING BICYCLE RACK

The poster will contain the text including graphs, tables, photos, etc. It will be written in manner of retrograde dismemberment. Short introduction will speak about problem of bicycle parking in Maribor. In continue you will be able to see beginnings of our project (ideas, conceptions, etc.). Furthermore, predictable price of the rack, methods we used during development will also be presented. Besides, you will see technical and economic evaluation of solutions. In the end it will be written basic calculation with possible loads which can appear during the usage. If we have enough time, you will be able to see model of the rack.

VERSENKBARER FAHRRADSTÄNDER

Das Poster enthält den Text einschließlich Graphiken, Tabellen, Fotos etc. Es zeigt eine schrittweise Zerlegung des Fahrradständers. In einer kurzen Einleitung werden die Probleme des Fahrradparkens erläutert. Danach wird auf die Anfänge unseres Projekts (Ideen, Konzepte etc.) eingegangen. Außerdem wird über den voraussichtlichen Preis des Fahrradständers sowie über die während des Entwicklungsprozesses angewandten Methoden Auskunft gegeben. Des weiteren wird eine technische und wirtschaftliche Evaluierung verschiedener Lösungen vorgenommen. Zu guter Letzt wird eine schriftliche Berechnung der möglichen Belastungen, die während des Gebrauchs zum Tragen kommen können, präsentiert.

Wenn wir genug Zeit haben, werden wir auch ein Modell des Fahrradständers vorführen.

POGREZLJIVO KOLESARSKO STOJALO

Poster bo vseboval različne grafe, tabele, slike in seveda tekst. Prikazan bo v obliki retrogradne razčlenitve. V uvodu bo predstavljena na kratko problematika parkiranja koles v Mariboru, ki mu bodo sledili začetki našega projekta (ideje, koncepti, itd.). Prav tako bo mogoče videti predvideno ceno stojala, metode ki smo jih uporabljali pri razvoju ovrednotene s tehničnega kot tudi ekonomskega vidika. V zaključku bo predstavljen tudi postopek tehničnega izračuna s predpostavljenimi obremenitvami, ki se lahko pojavijo pri uporabi kakor tudi v stanju mirovanja in seveda sklep kaj smo s tem dosegli.

SINKING BICYCLE RACK - CycloRACK

1. INTRODUCTION

Rapid development of motorization in last decades has influenced to our lives very much as well as to the traffic image of our town. At that time, bicycle was very important way of transport. We used it for going to work or for shorter daily trails. With higher living of standard, he was replaced with comfortable car. "If you want to be something more", drive car. Once used bicycles were beginning to corroded by rust in a woodsheds and cellars.



Figure 1: Lack of bicycle racks in front of entrance to university.

Traffic in our town is becoming more and more problematic. Because of that, we have to take steps in different ways to decrease harmful influences of cars to our lives and work in urban environment which surrounds us. The best solution is to take up all kinds of cycling. One must take into account that prerequisite for mass-cycling, well organized and built cycling infrastructure is needed. Inhabitants are aware of badly organized cycling infrastructure. This is main reason, that we (group of seven students at the University of Maribor, Faculty of Mechanical Engineering, Industrial engineering program) put our knowledge, experiences and interests together and designed as well as practically represent a model of sinking bicycle rack, named CycloRACK. Why racks, but paths are enough? No, you must realize that bicycle racks are crucial element for promoting cycling.

2. PROJECT CONTENTS

2.1 REQUIREMENTS

To do project properly, we evaluated it in detail with additional secondary conditions through following criteria: quality, geometry, kinematics, statics, dynamics, quantity, energy, ergonomics, ecology, execution, transport, security, costs and terms. Costs were predominating. In that case we chose new method for calculating costs, named target costing. We derived from expected market price as well as requested profit, which has to be basic lodestar for controlling volume of operation over the costs. Hence it follows target cost, added by other costs for instance: costs of development, sale, management etc. Ultimate costs are of course production one with crucial meaning before beginning of production line for mentioned product.

Existing target costs are a good grounding for activity with reference to industrial design, construction and making products, procurement of semi-finished products and components or even with procurement of end products by other manufacturers, which could incorporate into rounded up sale-production program.

2.2 MARKET RESEARCH

Nowadays, all enterprises who want to succeed and be one step every moment in front of the competitors by doing their own activities have to innovate, because innovations are basic conditions for existence on today labor market. Before enterprise decide about marketing a new product, the market research has to be done, which is almost necessary in

every prospective way. Market research are systematic channels of getting important information about market and end-buyers. They are important for objective judgement of temporary situation on market and also for starting-points were leading of tactic and strategic directions of each and every enterprise with higher certainty is based on. Another advantage of market research, it is a source of information about evaluation of their own products and service as well as about shares of competitors and trade marks.

If we restrict oneself to our rack, we also decided to involve into a process of new product development, the market research, done by a questionnaire. The questionnaire included a representative sample of 100 people, where 15 enterprises and 85 individuals were asked about simple questions. 35 people did it through Internet - <http://www.uni-mb.si/~ustodd57b/t/anketa/cyclo-anketa.htm>, 20 more by snail mail, 25 passersby and 20 high-school students were asked.

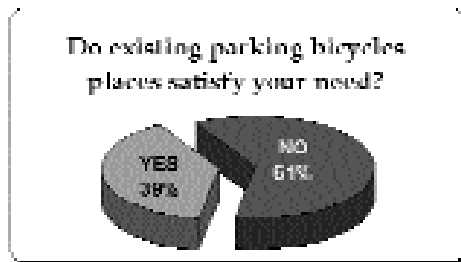


Figure 2: Most of the inhabitants are not satisfied with existing bicycle racks.

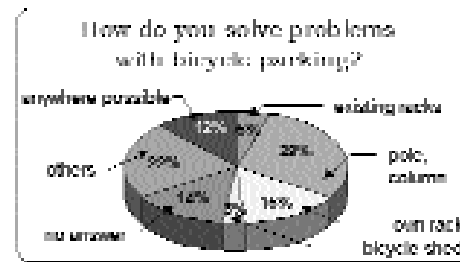


Figure 3: Inhabitants are not aware of how dangerous can be leaving bike wherever is possible.

The results showed us, that more than half of them have problems with bicycle parking in the center and suburbs. They lean bicycle against the wall, use existing stand on the bike or they park wherever available space is. This modes of parking bicycles are forbidden, dangerous for pedestrians and drivers, but at the same time they warn us, that we need a perfect and well designed product which solves such problems with parking, seeing that people are not satisfied with existing ones, mainly. In addition, they are not satisfied neither with access to them, security, working effect, and what is more, we have lack of them. Besides of using the rack in public places it can be used also individually, so answers about price rang was as expected. Mostly, end-buyers would give from 4000 SIT (21 EUR) to 6000 SIT (31 EUR) for future product.

2.3 635 METHOD, BRAINSTORMING

635 - 6 PEOPLE, 3 IDEAS, 5 MINUTES

It is a method by which through partially functions of the rack we came to five integrating similar combinations of operation of our rack. All variants are integrated into morphological matrix. Evaluating was based on different criteria. Final decisions were made after discussion with brainstorming method, which is very effective and widespread method in today business world in most of enterprises abroad as well as here in Slovenia.

2.4 EVALUATION

Possible solutions were evaluated from technical and economic aspect by us.

Technical criteria: simplicity for use, security, simplicity of maintenance and cleaning, simplicity of fitting, technical practicability, simplicity to make, ecological acceptance, functionality, season period.

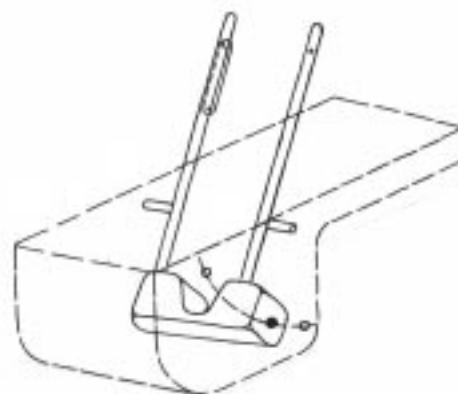
We exposed economic values with comparison of evaluated costs of possible variants and ideal production costs (standard VDI 2225).

As cheapest, trade interesting and technical improved we found the best variant showed on the picture below.

2.5 CALCULATION

As a every technical object, it also needs calculation and specific level of security. With computational methods we

Figure 4: Approximated draft of variant which best fits our requirements through mentioned criteria.



guarantee high level of security against bicycle thieves, possible damages when operating and climate influences. It can handle against all expected loads, which appear when operating as well as being not activated.

2.6 MODEL

Every inventor's wish is, reach the ultimate goal, which in our case is high performance product. As students, whose financial support is rather limited we succeeded and did a wood-made model which in 90% (percent) present us a real operation of the future market acceptable and successful bicycle rack.



Operation - working effect

Figure 55 Wood-made model of our bicycle rack - CycloRACK. Representing the use of the rack and view of its two possible positions. The rack can only be activated by pulling position you lock the bike using your own locker and "ears" (holes) on the rack. When pulling the bike out it sinks into its primary position because of counterbalance.

Practicability

The word sinking additionally explains the advantage of our rack. If there is no bicycle parked, the rack doesn't present

an obstacle to pedestrians or other kind of traffic. Its main advantage is, that it doesn't present a danger for its users - cyclists. During the work on the development of the rack the main ideas were, to place them at the same locations as the existing ones and what is more important, to be able to put them on the delivery and similar paths, where they won't hinder the rare traffic (intervention of ambulance, fire-brigade etc.).

3. CONCLUSION

By solving different problems during the work, we found out lots of global approaches in computer added design. At the beginning of the project, troubles occurred fastly. Before we planed, we should do a market research, but because of the time lack, we did it parallel. We did market research to assure better connection between real circumstances in trade market and drafting the product. By performing a questionnaire we used a different media (cycling clubs around all Slovenia, Internet, coincident people in the street and high school students).

We were planning over the guidance of assistant professor. Because we wanted to expand our knowledge and to have high quality product, we reestablished relations with enterprise KOGAL, s.p. and dr. Danijel Rebolj from Faculty of Civil Engineering in Maribor. A collaboration with KOGAL, s.p., gave us more realistic data from profession and assure us higher level of technical as well as economic knowledge. Our wish is to get a copyright for the rack and improve it from different aspects. The next step is getting issued with a patent, who knows, maybe offering for sale.

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USAGE OF A FOLDABLE BICYCLE IN URBAN AND TRAVELLING CONTEXT

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USAGE OF A FOLDABLE BICYCLE IN URBAN AND TRAVELLING CONTEXT

Folding bikes can radically transform the way people relate to cycling and transportation in general. Apart from explaining the concept and the potentials of such bicycles, the article exposes the way in which the author as a particular user became aware of their existence, why he was brought to the decision of buying one, and most importantly, what different uses he is able to make out of it. Through a concrete example in the present and also through the in-depth analysis of a user discussion group on the Internet, this case study attempts to reflect on the role folding bicycles could and probably will play in the transportation of the future.

NUTZUNG VON KLAPPRÄDERN IM STÄDTISCHEN UMFELD UND AUF REISEN

Klappräder können die Einstellung der Menschen zum Radfahren und zum Verkehr im allgemeinen radikal verändern. Das Referat erklärt das Konzept und das Potential derartiger Fahrräder und stellt dar, wie der Autor als Einzelbenutzer von der Existenz dieses Fahrradtyps erfuhr, was ihn bewogen hat, ein solches Fahrrad zu erwerben, und, was am wichtigsten ist, zu welchen verschiedenen Zwecken er dieses Fahrzeug einsetzen kann. Anhand eines konkreten Beispiels aus der Gegenwart und mittels umfassender Analysen einer Benutzer-Diskussionsgruppe im Internet versucht diese Fallstudie, zu klären, welche Rolle Klappräder im Verkehrswesen der Zukunft spielen könnten und wahrscheinlich spielen werden.

UPORABA ZLOŽLJIVEGA KOLESA V URBANEM IN POTOVALNEM KONTEKSTU

Zložljiva kolesa lahko radikalno spremenijo način gledanja ljudi na kolesarjenje in prevoz na splošno. Razen razširjanja koncepta in potencialov takšnih koles, referat razkriva način, kako je avtor kot določen uporabnik ugotovil za njihov obstoj, kako se je odločil, da ga kupi, in kar je najpomembnejše, na koliko različnih načinov ga lahko uporablja. S pomočjo konkretnega primera ter s pomočjo globinske analize uporabnikov pogovorne skupine na internetu poskuša ta študija osvetliti vlogo zložljivega kolesa, ki bi jo lahko in jo najbrž tudi bo imelo to kolo za prevoz v prihodnosti.

USAGE OF A FOLDABLE BICYCLE IN URBAN AND TRAVELLING CONTEXT**0. INTRODUCTION**

There is surprisingly little talk at international bicycle conferences about the potential impact of folding bicycles on the development of cycling worldwide. The following analysis aims at filling this gap by exposing the viewpoint of a user based on his riding experience of a completely foldable bicycle in Paris and in Budapest. It takes into account the current position of foldable bicycles in society and on the market (their available features, their uniqueness, their price etc). Although the following description will certainly reveal which particular foldable bicycle I am talking about to those who already know it, I felt it necessary to conceal its name, in order to avoid being accused of having financial interest in its promotion.

1. A NEW KIND OF FOLDABILITY

The concept of the foldable bicycle is not new everywhere. In countries like Hungary, small bicycles with limited foldability (i.e. foldable in two in order to be put in the trunk of a car) have been mass-produced for decades. However, the more recent Western models present a series of improvements that radically transform the way in which we can take advantage of foldability. The fact that riding quality is nearly equal to that of normal bikes, that folding and unfolding time has been dramatically reduced and that handling in folded state is simplified mean that the new generation of foldable bicycles can be used in contexts we had never dreamed of. Rather than being an independent vehicle that accompanies its user only for the time of the travel, it turns the bicycle into an integrated personal prosthesis such as roller-skates or clothes that can remain with us all the time and be ready to be used whenever needed.

2. AVAILABILITY

Apart from their relative novelty, one of the possible reasons why foldable bicycles have not yet become wide-spread is an abnormal lack of common knowledge about them. What is more, not all foldable models offer the same practical advantages, many may seem discouraging because of clumsy handling or insecure ride. The one that this study discusses is in many respects the best model on the current market. However, this particular foldable bicycle firm for some reason do not intend to break through with their models on the international market, they are satisfied with keeping them in the class of expensive elite bicycles produced in small-scale manufacturing, accessible only to a relatively wealthy public. Because its marketing is inconsistent or even non-existent, virtually the only way to find out about the bicycle is by seeing it in the street or hearing about it from somebody.

Other drawbacks are limited availability (produced only in Great Britain, often large time-spans between order and actual purchase) and high price. Without being able to try it beforehand, it is difficult to make the decision of investing in such a new and unfamiliar item. This is why before eventually transforming everybody's travelling habits, folding bicycles will first serve those who have a real need for their special feature.

To sum it up, in the current conditions three factors have to be favorable for somebody to buy this foldable bicycle: a concrete need for its foldability, previous direct experience, and ability to purchase.

3. THE FEATURES OF THE BICYCLE

3.1. FOLDING/UNFOLDING

The key to the bicycle's success is in the revolutionary folding action. The back part, the rear wheel assembly backwards from the seat pillar hangs loose, as if the bicycle was broken. It is our own weight that keeps it together while riding on it. This seemingly awkward feature allows the folding to be done in 17-18 seconds, since once the rear wheel assembly is folded under the frame in an upside down position, all that remains to be done is the lowering of the seat pillar and of the handlebar to end up with a compact bundle of frame, tires and accessories that sticks together when you lift it. These are the main points of the folding procedure, although many details could be discussed further to illustrate this theoretically complex but in practice very simple action.

3.2. FOLDED MODE

This foldable bicycle is closest of all existing vehicles to the concept of portability, but it is not a portable bicycle. A little smaller and 5 kilograms lighter, it would be one. But at 11 kilograms and at the size of a small suitcase (H 565 mm L 545 mm W 250 mm), it is only suited to be carried on small distances and not in overcrowded public spaces like subways during peak hours.

In folded mode the bicycle can be pulled by the unfolded handlebar on its miniature plastic wheels, which is useful only in very specific conditions: when the distance is too long to carry the bicycle in your hands but too short to unfold it, and you know that you would have to unfold and fold it several times. Not to mention that the mini wheels are extremely sensitive to the unevenness of the ground, you can only use them on completely smooth surfaces.

So most of the time the folded bicycle can be just grabbed by the frame and carried as a suitcase. Switching hands every hundred meters approximately will avoid feeling tired in the arms too quickly. Unless the frame of the bicycle is dirty too, you will not get stained carrying it: the chain is inside the folded frame and does not get in contact with you or other people standing beside you.

The only extra piece that it is advised to buy for the bicycle is the folding left pedal, which is otherwise the only part that sticks out from the compact folded assembly, bumping into everything.

3.3. UNFOLDED MODE

There is little danger of being wrong in saying that unfolded, this foldable model works as any other city bicycle. The joints are solid and with the three or five-gear system in the hub one can move around as easily and quickly (even on slopes) as on a traditional bicycle.

The main difference is in stability, due to the small diameter of the wheels, which is as much an advantage as a drawback. Although at first it may seem weird that the bicycle responds to the slightest movement of the hands on the handlebars, it does not feel insecure, even when descending from a hill at full speed. On the other hand, the size of the wheels makes it much easier to navigate between cars trapped in a traffic jam or other obstacles that require intensive steering. What is clearly a disadvantage is the extreme sensibility of the bicycle to the unevenness of the road surface. It is virtually impossible to ride on some paved roads, and even relatively smooth surfaces that you do not even notice on a normal bike are unpleasant for the user of a foldable model. However, occasional bumps are not a problem, because the bicycle has excellent suspension thanks to the rubber bumper at the meeting point of the rear wheel assembly and the rest of the frame.

The other thing one might find uncomfortable is the way the rear wheel assembly flaps back when the bicycle is lifted by the handlebar and the seat pillar. The manual says we should not bother about it, just let it hang and bump into everything, and this mode is indeed quite satisfactory when lifting the unfolded bicycle on stairs, because with the bottom of the saddle resting on the shoulder both hands are free. Alternatively, for short distances the bicycle can be grabbed by the small plastic wheels of the rear wheel assembly instead of the seat pillar, which requires a little more bending and effort, but keeps the bicycle together.

Another positive aspect of this feature is that parking the bicycle by swinging the rear wheel assembly under the frame is even easier than parking a normal bike.

People have reportedly covered over 100 kilometers in a day on this folding bicycle, even though its primary function is not touring but urban commuting. For this latter purpose it serves as a quality city bicycle from every respect (speed, comfort, security).

4. USING THE BICYCLE

4.1. CYCLING STRATEGY

The main advantage of the ideal portable bicycle is that you can switch from cycling to another mode of transport at any point in your trip. Possible reasons include big traffic, bad weather, exhaustion or illness, distance, flat tire. However, as every urban cyclist knows it, if the distance is inferior to five kilometers the most convenient means of transport remains the bicycle. And once you are sitting on it, why not go even further? So in the author's practice during approximately 80% of all trips in Paris the bicycle was used exclusively in its unfolded mode. In Budapest, boring suburbs and a greater distance cause me to always take the subway to get to the center, where I unfold the bicycle and ride away on it.

Unlike in the case of normal bikes, here it is not so much weather conditions or distance that influence the choice of going by bicycle or not, but the proportion of the distance to be covered by foot with your folded bike and the distance feasible on the unfolded vehicle. It does not make much sense to carry the bike in your hand for a total of one hour if you only use it for five minutes on the way from home to the subway station in the morning and back in the evening, especially if in the meantime you intend to do area-limited activities with frequent short movements in and out like shopping.

Carrying the bicycle with you in a complex subway system (like the one in Paris) is also disagreeable. The best way to deal with the situation is to acquire a good knowledge of the main stations and spot the nearest and shortest exit to the surface, regardless of the destination. Once at the surface, sitting on the unfolded bike things are much easier.

Apart from daily commuting, it is also a great idea to take the bicycle with you when travelling for business or on holidays. Combined with long-distance public transport (trains and planes), it provides an immediate and practical means to move around that allows you to skip the financial and mental costs of using an unfamiliar network of local transportation when arriving in a town.

Although the author of this study has never had any problem of the kind, in some places and circumstances it is possible that the public transportation staff refuse to consider the folded bicycle as free hand luggage. As an intermediate solution until the necessary modification of public transport company policies, an extra cover can be purchased that transforms the folded bicycle into an effective hand-luggage of which only the saddle emerges on the top.

4.2. PARKING STRATEGY

Theft is the main reason that prevents the foldable bicycle owner from leaving it attached to racks as he or she would do with normal bicycles. As long as you have it with you (and in this case you can have it all the time) nothing can happen.

It is easy to find a corner or a space under a table in the office or at home where you can "park" the folded bicycle so that it does not disturb anybody. Public places however are more difficult to handle. There are four possible outcomes of an attempt at penetrating with the bicycle. You may be refused completely and categorically by the personnel. The personnel may ask you to leave the bicycle to their care at the reception/wardrobe etc. You may be able to find a spot inside the building where you can lock the bicycle in its folded state (e.g. in supermarkets) so that you will not have to carry it around. Finally you may have to keep the bicycle with you all the time (e.g. in canteens, some cinemas etc.).

Experiences vary depending on the country and on the public institution. As a general rule it can be stated that it is better to fold up the bicycle beforehand (not in front of the entrance) because when some people see what it was originally they just say: no bicycles allowed in here and become deaf to all further negotiation.

5. COMPARISON OF THE ADVANTAGES OF THE FOLDABLE BICYCLE AND OF A NORMAL CITY BICYCLE

Advantages of the foldable bicycle	Advantages of a normal city bike (=disadvantages of the foldable bicycle)
<ul style="list-style-type: none"> - it does not get stolen since it is always with you - it is easy to store it at home or at work (ideal for apartments in blocks of flats) - as a cyclist: at any time you can switch from cycling to another mode of transport if the weather turns bad, you are tired or you do not feel well, you have a flat tire, suddenly you have to go very far, the traffic becomes too dense etc. - as a public transport user: you can reduce walking times (to the station etc.) - it helps raise public awareness of transport issues 	<ul style="list-style-type: none"> - it may have more gears and may be more comfortable and faster (but not necessarily) - a second person can be carried on most bikes - it is less sensitive to the unevenness of the road surface
	<ul style="list-style-type: none"> - it is easy to navigate between cars in a traffic jam because the wheels are small - it can be easily transported from one town to the other or on holidays by plane, by car or by train

From the point of view of the promotion of cyclism as a means of transport, a similar list of advantages can be set up. The following important and largely unresolved issues in present-day urban cycling could find a satisfactory solution in the wide-spread use of foldable bicycles:

- **bicycle parking**
- **theft**
- **combination of cycling and public transport**
- **weather dependence**

Not to mention the fact that foldability makes cycling more accessible in general.

Activist groups such as the members of the ECF should therefore concentrate their efforts on the promotion of foldable bicycles, on the improvement of their availability and of the conditions of their usage.

The following general measures should be achieved in order to ensure this:

- the promotion and manufacturing of foldable bicycles such as the one described in this study should be taken out of the hands of small private firms in order to switch to cheaper mass-production
- serious campaigning work should be carried out in order to increase people's awareness of this special kind of bicycle and of its advantages
- transport company policies and the internal rules of public institutions have to be modified to officially accept folding bicycles as normal hand luggage

If the operation turns out to be successful, other necessary measures will follow:

- public transport vehicles (both urban and long-distance) will have to be redesigned to accommodate the passengers' 'luggage'
- special guarded or lockable storing places will have to be set up inside the public institutions

After all it does not seem to be such a big investment. The major part of the change is to happen in the portable bicycle manufacturers' attitude and in the habits of people.

PROMOTING THE USE OF RECUMBENT CYCLES

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ENGLISH

PROMOTING THE USE OF RECUMBENT CYCLES

Recumbent cycles are in many ways superior in comparison to normal bikes which are based on the Rover 'safety-bike' of the 20's. In this article some cues are given to promote the use of recumbent cycles. These cues are based on social-psychological theories.

Effective strategies to improve the use and attitude of people towards recumbent cycles are social stimulation, communication and education. These strategies are directed towards certain factors which predict the behavior. The main four types of behavior models are presented.

Based on the model of reasoned action and the theory of behavior determined by attitudes, beliefs and social norms a composite model is presented. With this model conclusions are drawn and recommendations are made to promote the use of recumbent cycles.

DEUTSCH

FÖRDERUNG DES GEBRAUCHS VON LIEGERÄDERN

Liegeräder sind normalen Fahrrädern, die noch auf dem „Sicherheitsfahrrad“ des Herstellers Rover aus den 20er Jahren basieren, in vielerlei Hinsicht überlegen. In diesem Referat werden einige Hinweise darauf gegeben, wie der Gebrauch von Liegefahrrädern gefördert werden kann. Diese Hinweise basieren auf sozialpsychologischen Theorien.

Als effiziente Strategien zur Förderung des Gebrauchs von Liegerädern und zur Verbesserung der Einstellung gegenüber diesem Fortbewegungsmittel eignen sich soziale Stimulation, Kommunikation und Erziehung. Diese Strategien sind auf bestimmte verhaltensbestimmende Faktoren ausgerichtet. Im Referat werden die vier Haupttypen von Verhaltensmodellen vorgestellt.

Auf der Grundlage des Model of Reasoned Action und der Theorie, daß Verhalten von Ansichten, Überzeugungen und sozialen Normen bestimmt wird, wird ein kombiniertes Modell vorgestellt. Mit Hilfe dieses Modells werden Schlüsse gezogen und Empfehlungen dafür abgegeben, wie man den Gebrauch von Liegerädern fördern kann.

SLOVENSKO

PROMOCIJA UPORABE LEŽEČIH KOLES

Ležeča kolesa, so v primerjavi z normalnimi kolesi, ki temeljijo na Roverjevem "varnostnem kolesu" iz 20-ih let, v mnogočem boljša. V prispevku so podani nekateri namigi, ki promovirajo uporabo ležečih koles. Ti namigi so zasnovani na socialno-psiholoških teorijah.

Učinkovite strategije, katerih namen je izboljšanje uporabe in mnenja ljudi o uporabi ležečih koles, so socialna stimulacija, komunikacija in izobraževanje. Te strategije so usmerjene k določenim faktorjem, ki napovedujejo vedenje. Predstavljeni so štiri glavni tipi vedenjskih modelov.

Predstavljen je sestavljen model, ki je osnovan na modelu utemeljenih dejanj in na vedenjski teoriji ter prepričanjih in socialnih normah. S tem modelom so podani sklepi in priporočila za promocijo ležečih koles.

TUESDAY

PROMOTING THE USE OF RECUMBENT CYCLES

INTRODUCTION

Recumbent or reclining cycles are in many ways superior on comparison to normal bikes which are based on the Rover 'safety-bike' of the 20's. The main advantages are a higher speed (due to less air resistance) and a greater comfort. These clear highlights makes the recumbent cycle promising for medium and longer distances on flat ground. Unfortunately the Union Cycliste Internationale (UCI) banned all recumbents and aerodynamic devices from bicycle races in 1934. That's probably the main reason why the enthusiasm from public and industry is so low. In this paper some cues are given to promote the use of recumbent cycles. These cues are based on social-psychological theories.

CONTRIBUTION OF BICYCLES TO THE DUTCH TRAFFIC

In the Netherlands the adverse consequences of the dominant role of motorcars in traffic are becoming more and more profound. The growing awareness of the importance environmental protection and delays due to traffic jams makes the need for new ways of transportation clear. Public transport and carpooling are stimulated. Although approximately 40% of all movements by car are shorter than 5 kilometres and 60% of the commuter traffic is on distances within 10 kilometres, bicycle traffic plays a minor role in the traffic policy. With continuation of the momentary policy even a relatively smaller part of bicycle mobility is forecasted. The main reason is the predicted strong growth of long-distance movements.

OPPORTUNITIES FOR THE RECUMBENT CYCLE?

The forecasted mobility growth with all the negative consequences of it, sets theoretical a good point of departure for the recumbent cycle. But is the recumbent cycle really likely to become a success? There are five factors which predict the commercial success of new products and concepts:

1. Relative advantage: how superior is the product?
2. Complexity: is it easy to use?
3. Compatibility: is the product easy adoptable?
4. Divisibility: is it easy to try, without high initial costs?
5. Communication: are advantages easy to explain?

Intuitive scoring makes clear that the recumbent cycle has a good performance on the first three factors:

- recumbent cycles have clear advantages in speed and comfort. Cycles with an enclosed bodywork have the added pluspoint of weatherprotection.
 - The recumbent cycle is not difficult to ride. No long practice is needed.
 - For people who are used to cycling (in the Netherlands approx. 15 million people) no change in habits or life-style is necessary.
- More problematic are the points of divisibility and communication. Almost all recumbent cycles have relative high initial costs and - although rapidly changing - the distribution of the product is not very well. Even in the Netherlands the recumbent cycle is not very well known and most people are unaware of the unique selling points of it.

SOCIAL-PSYCHOLOGICAL THEORIES

The clear 'rational' advantages of recumbent cycles are not sufficient to guarantee success. The behaviour of human beings is often more accurately explained by irrational and 'emotional' factors. More soft aspects like reliability, independence and social status play an important role. In this way sociology and psychology can help us further to understand effective ways to promote the use of recumbent cycles.

Six strategies for the change of behaviour

The six main strategies to influence the behavior of people towards the use of recumbent cycles are:

1. physical measurements
2. legislation and enforcement
3. organizational measurements
4. economic-financial stimulation

5. social stimulation
6. communication and education

The strategy 'legislation and enforcement' is an interesting point for the UCI. If recumbent cycles are allowed on normal bicycle competitions the world of cycling could change rapidly. Economic-financial stimulation can be productive. Financial aid for the purchase of recumbents makes the barrier easier to take. The most effective strategies seem to be social stimulation, communication and education. The social context of potential cyclist is an important determinant of behaviour. The perceptions of significant others' preferences about whether one should engage in the desired behaviour (namely: the use of recumbent cycles) have impact on the attitude towards and the intention of behaviour. With communication and education the target groups can be informed, become more aware and become more positive about recumbent cycles. Because of the fact that most people are unaware of the benefits of recumbents a more informational, instead of emotional approach is expected to be effective.

BEHAVIOUR THEORIES

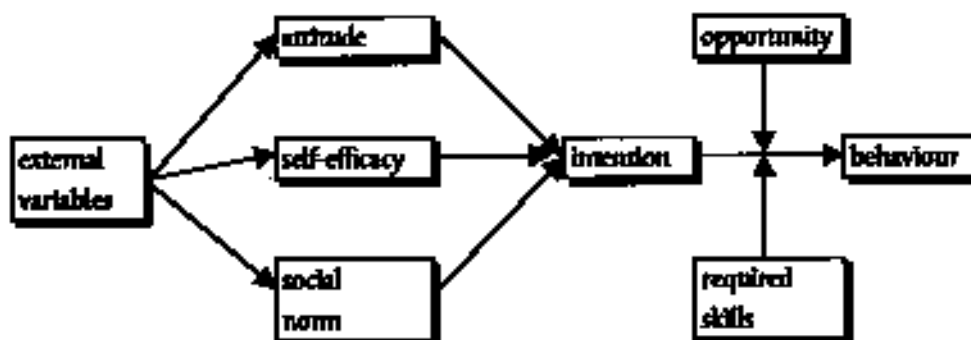
The presented strategies are directed towards certain factors which determine the behaviour. There are four theories of behaviour models:

- theory of reasoned action: behaviour is determined by the rational evaluation of expected consequences of the act.
- The theory of behaviour determined by attitudes, beliefs and social norms.
- The theory of behaviour based on habits: sequences of behaviour that have become relatively automatic in the sense that they occur without self-instruction. Due to repetition the conscious evaluation of the consequences has disappeared. The same conditions evokes almost automatically the same behaviour as before.
- Impulsive / reflexive behaviour: certain cues trigger spontaneously and automatically a certain response (behaviour).

All these theories are usefull to describe and explain certain behaviours. In practice most behaviours are explained and predicted by a mix of the presented models. The most relevant theories for stimulation the use of recumbents are behaviours predicted directly from attitudes and habitual behaviour.

A COMPOSITE BEHAVIOUR MODEL

Based on the model of reasoned action and the theory of behaviour determined by attitudes, beliefs and social norms a composite model is developed. In this model for voluntary attitude and behaviour change, also social theories for influencing people are used. See figure 1.



Suppose the desired behaviour is the use of recumbent cycles. This behaviour is determined by the intention. Intention, enabled by perceived opportunity, and when the required skills are not too high the behaviour will occur. Intention is determined by the three factors attitude, social norm and self-efficacy. The attitude is the tendency expressing the degree of favor or disfavor of the particular entity. Social norms refer to the

perception of significant other's attitudes of the object and the motivation to adjust to the opinions of these others. Self-efficacy is the conviction that one can successfully execute the behaviour. These factors all have a relationship with the external variables (personality, past behaviour and demography). Most important external variable is past behaviour. The evaluation of past behaviour determines for a part the attitude towards repeating this behaviour.

PRACTICAL USE

Some practical implications from the above presented model are:

- create enough opportunities for recumbent cycle use
- make the required skills low by using easy cycles and a comfortable circuit to try out
- creating a positive intention by:
 - attitude change in the desired direction
 - high perceived behaviour control
 - social stimulation by persuasion by people who are psychologically important for the target group
- research of the external variables can make clear what characterizes potential recumbent cyclists.

HABITUAL BEHAVIOUR

The concept of habit implies that a behaviour has become so routinized through repetition that a person has ceased to make any conscious decision to act yet still behaves in the accustomed way. The problem is that habitual behaviours are less affected by behavioural intentions. To change habits is difficult. An effective way to change habitual behaviour is on mutation moments. On the moment that one's situation changes a person takes all aspects once again in consideration. Examples of mutation moments are: the change of work or address or the decision to buy a new bicycle.

CONCLUSIONS AND RECOMMENDATIONS

For the development of an effective strategy for stimulating the use of recumbents it is at first necessary to get clear what the attitudes, social norms etcetera momentary are. With some research the knowledge and attitudes toward recumbent cycles of the general public, the bicycle industry and policymakers can be accessed. The next step can be differentiation of measures towards different target groups. Most common strategy is the development of a public campaign for stimulating cycling on recumbents. Some specific advices of public communication campaigns are:

- make the advantages of recumbent cycles clear at the individual level, do not appeal to public interests like the care for the environment;
- Anticipate on human needs for freedom, independence and personal development;
- Create a positive atmosphere around recumbent cycles;
- Because there is a lack of knowledge at target groups it is also important to communicate rational arguments and facts.

On the other hand are the effects of public communication campaigns often overestimated. Effects are not always in control. Unforeseen incidents can have strong negative effects of the actions taken. This gives a further argument for sampling a strong background document with facts and figures.

OTHER RECOMMENDATIONS ARE:

- create a lot of opportunities to try a recumbent cycle (for example the annual 'cycle vision'-event in the Netherlands);
- make the subjective ability to cycle on a recumbent low. VIP's can be asked to demonstrate their ability to cycle to the public;
- joint-promotion actions with for example manufactures of sportarticles and healthy foodsupplies;
- anticipate on 'mutation' moments like the movement of a company;
- communicate the facts, arguments and figures about recumbent cycles to policy makers, the bicycle industry and traffic consultancy companies;
- stimulate free publicity by intensive contacts with the media and press.

IN DEPTH INTERVIEWS WITH ROAD USERS IN CYCLIST ACCIDENTS

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ENGLISH

IN DEPTH INTERVIEWS WITH ROAD USERS IN CYCLIST ACCIDENTS

The ADONIS project focus on promoting a shift from car driving to cycling and walking on short trips in big cities and making these modes safer.

As part of the project, personal interviews of accident-involved pedestrians, cyclists and car drivers were carried out in Copenhagen, Amsterdam and Barcelona. The study comprised 105 interviews. This presentation focus on interviews with road users involved in cyclist accidents.

The interviews provide valuable insight into why accidents occur, how road users have perceived the accident situation and how the accident has influenced them. The interviewees suggest recommendations for measures to be taken in order to increase cyclists' safety, their feeling of security and the possibilities of influencing car drivers to change to cycling.

TUESDAY

DEUTSCH

UMFASSENDE INTERVIEWS MIT STRASSENBenutzern, DIE AN FAHRRADUNFÄLLEN BETEILIGT WAREN

Das Projekt ADONIS konzentriert sich darauf, eine Verhaltensänderung in dem Sinne zu bewirken, daß kurze Distanzen in Großstädten nicht mehr mit dem Auto, sondern vermehrt mit dem Fahrrad oder zu Fuß zurückgelegt werden, wobei die Verkehrssicherheit für Radfahrer und Fußgänger erhöht werden soll.

Als Teil des Projekts wurden in Kopenhagen, Amsterdam und Barcelona persönliche Interviews mit Fußgängern, Radfahrern und Autofahrern geführt, die an Unfällen beteiligt waren. Die Studie umfaßte 105 solcher Interviews. Das Referat konzentriert sich auf Interviews mit Straßenbenutzern, die an Fahrradunfällen beteiligt waren.

Die Interviews bieten wertvolle Einblicke in die Ursachen von Unfällen. Sie zeigen, wie die Straßenbenutzer die Unfallsituation wahrgenommen haben und wie der Unfall sie beeinflußt hat. Die Befragten empfehlen Maßnahmen, die getroffen werden könnten, um die Sicherheit der Radfahrer zu erhöhen und ihnen ein stärkeres Gefühl von Sicherheit zu vermitteln, und sprechen über Möglichkeiten, Autofahrer zum Umstieg auf das Fahrrad zu bewegen.

SLOVENSKO

PODROBNI RAZGOVORI Z UPORABNIKI CEST V KOLESARSKIH NESREČAH

Projekt ADONIS se osredotoča na promocijo prehoda od vožnje z avtomobilom na kolesarjenje in hojo za kratke izlete v večja mesta in napraviti ta način varnejši.

Osebnosti razgovori z udeleženci nesreč - pešci, kolesarji in vozniki avtomobilov - so bili izvedeni kot del projekta v Kopenhagenu, Amsterdamu in Barceloni. Opravljenih je bilo 105 razgovorov. Ta predstavitev se osredotoča na razgovore s tistimi uporabniki cestišč, ki so bili udeleženi v kolesarskih nesrečah.

Intervjuji prinašajo dragocene vpoglede v vzroke, zaradi katerih se nesreče dogajajo, kako so udeleženci doživeli situacijo prometne nesreče in kako je ta nanje vplivala. Vprašani so dajali priporočila za ukrepe, ki bi bili potrebni za povečanje varnosti kolesarjev, njihovo počutje zavarovanosti in možnosti vplivanja na voznike avtomobilov, da bi se začeli voziti s kolesom.

IN DEPTH INTERVIEWS WITH ROAD USERS IN CYCLIST ACCIDENTS

INTRODUCTION

The main purpose of the ADONIS¹ project was to promote a shift from car driving to cycling and walking on short trips in big cities, and make these modes safer. As part of the project a qualitative approach to explore cyclist and pedestrian accidents was taken by means of personal interviews of accident-involved road users in Copenhagen, Amsterdam and Barcelona, in total 105 interviews.

These interviews have provided valuable insight into why accidents occur, how road users have perceived the accident situation and how the accident has influenced them. The interviewees suggest recommendations for measures to be taken in order to increase cyclists' and pedestrians' safety, their feeling of security and the possibilities of influencing car drivers to change to cycling and walking. The three involved cities represent cities with different levels of cycling and walking and various degrees of implemented measures regarding cyclists and pedestrians. Therefore, aspects concerning cultural differences in behaviour, risk taking, law observance and suggestions for measures have also been revealed.

METHOD

The overall objective of the ADONIS project implies that drivers are encouraged to change from a more safe mode of transport to a less safe mode. From a safety point of view, this fact requires investigation of bicycle and pedestrian accidents in order to minimise the number of these accidents.

Drivers, who regularly travel by car for short trips, were to be encouraged to change their mode of transport to cycling or walking on their daily trips, for instance to and from work. Therefore, accidents similar to such accidents that might involve potential new cyclists and pedestrians were chosen for in-depth analysis. Existing knowledge of problem situations involving car drivers and cyclists or pedestrians formed the basis for choosing case accidents, from which the involved parties were in-depth interviewed. The objectives of the interviews were to collect information on:

- the trip on which the accident occurred
- the involved road users' behaviour and action just before the accident occurrence and their view on accident causation factors and responsibility
- their feeling of security and safety in traffic after the accident
- change in behaviour and exposure to traffic influenced by the accident
- their opinion of traffic regulations and their observance of specific rules
- their views on other road users' behaviour
- their suggestions for countermeasures to prevent similar accidents.

To get the acceptance of the parties, a personal letter was sent to both parties of the accident, indicating the aim of the interview and assuring full anonymity. All persons who were willing to participate were interviewed, irrespective of participation or acceptance of the other party. This paper concentrates on results from interviews with road users involved in cyclist accidents.

ACCIDENT FACTORS

The interviews with accident-involved cyclists and car drivers revealed that various factors might cause an accident. Primarily, accident factors are related to lack of awareness of other traffic, for instance lack of perceiving the other party as a hazard or misjudgement of the other party's intention, but also failure to obey the rules or poor visibility due to other vehicles or weather conditions were predominant. In the following you will find examples of these various accident factors. In many accidents more than one accident factor was found.

¹ADONIS - Analysis and Development Of New Insight into Substitution of short car trips by cycling and walking. A research project partly funded by EU - DG VII Transport TD Programme, Urban Sector.



Figure 1: Right turning car and cyclist riding ahead (Amsterdam)



Figure 2: Left turning car and oncoming cyclist (Copenhagen)



Figure 3: Cyclist riding ahead and car from the right (Amsterdam)

Inadequate perception.

Cars turning right in front of a cyclist in the same direction seemed to be a problem in Amsterdam. Neither cyclists nor drivers perceived the hazard in this situation, although it may be assumed that drivers should have had the possibility of perceiving the cyclists.

Figure 1 illustrates that cars have to pass the cycle lane before turning right. The example is from Amsterdam.

Another example of inadequate perception was left turning car drivers who often did not perceive oncoming cyclists for various reasons.

Figure 2 illustrates a car turning left in spite of an oncoming cyclist who was riding very fast. The example is from Copenhagen.

Furthermore, the interviews indicate that the Barcelona road users were often not aware of other traffic, and therefore were not able to make avoidance actions in time.

Misjudgement.

In some accidents the cyclist misjudged the car driver's intention to stop, which resulted in a collision. It seems as if the drivers must have concentrated on other motor traffic and neglected perceiving the cyclists as a hazard.

The illustration in figure 3 is from Amsterdam and shows a situation where the cyclist riding ahead was hit by a car from the right.

A car waiting for a cyclist to pass was another major problem in Copenhagen and Barcelona. This friendly minded manoeuvre caused some accidents, because other car drivers did not consider that a stopped car in another lane could probably hide a cyclist. Thus, they did not perceive an unexpected stopped car as a hazard, as showed in the photo from Copenhagen. In some of the Barcelona accidents the cyclist thought that the car was going to stop, but finally it did not.



Figure 4: Left turning car and oncoming cyclist (Copenhagen)



Figure 5: Car driving ahead and cyclist from the left (Copenhagen)

Not observing the rules.

Cars turning left in front of oncoming cyclists were found both in Amsterdam and Copenhagen. Often the car did not perceive the oncoming cyclist at all because he was hidden by other cars. On the other hand some cyclists had seen the cars but thought they would wait, as illustrated in figure 4.

Furthermore, high car or cycle speeds played an important role in a lot of the Barcelona and Copenhagen accidents,

Poor visibility.

Low sun, shadow or rainy weather were other frequent accident factors both in Copenhagen and Barcelona. Neither cyclists nor car drivers seemed to regard weather conditions as a hazard in traffic.

Furthermore, parked cars or busses also contributed to the fact that the two parties were hidden from each other with an accident as the result. See figure 5 from Copenhagen.

CHANGE IN BEHAVIOUR

The interviews indicate that many of the cyclists have changed their behaviour after the accident. Generally, the Amsterdam cyclists wait longer before crossing, they signal more and often choose more safe routes. Furthermore, it seems as if the Copenhagen cyclists more often cross at signalised crossings and are more aware of the importance of getting into eye contact to car drivers.

The Barcelona car drivers are more aware of the weather, both sun and rain, whereas the drivers in Copenhagen are more alert and turn their head to look for cyclists. But generally the accidents have neither affected mode choice nor exposure on daily trips, except for one single cyclist in Barcelona who stopped cycling to work after the accident.

ATTITUDES TO RULES AND REGULATIONS

Basically, the interviewees find rules and regulations sufficient and working well. Speed limits, per se limit and compulsory seat belt use are stated most important. As for regulations, more signalised crossings and cycle paths or cycle lanes are considered the most important physical facilities. But finding rules and regulations sufficient and working well does not imply observance of the rules.

It seems that car drivers in Copenhagen are the most law obeying. As for car drivers' showing their intention to keep their duty to give way to other road users, the Amsterdam and Copenhagen answers reflect a strong intention to do this, whereas this is not the case for car drivers from Barcelona. Cyclists signal less in Amsterdam and Barcelona than in Copenhagen, and cycling against red, especially by turning right, seems to be more common in Amsterdam than

Copenhagen.

The interviews reflect the accident-involved road users judge themselves to be as competent in traffic as other road users. In general, cyclists are risky and car drivers behave badly, drive too fast and do not stop for other road users. Taxi drivers are considered a problem in all countries. Special national problems exist, i.e. bicycle couriers in Copenhagen, mopeds in Amsterdam, and motorcyclists in Barcelona.

SUGGESTIONS FOR COUNTERMEASURES

The interviewees suggested recommendations for measures to be taken in order to increase cyclists' safety, their feeling of safety and the possibilities of influencing car drivers to change to cycling.

Generally, the suggestions for countermeasures comprise already known measures, but anyway there are national differences. Road users in Barcelona have not experienced sophisticated facilities for cyclists, which means that they are not able to suggest innovative measures of this kind. They more stick to proposals concerning information, education and enforcement, whereas the Amsterdam road users mention the problem of conspicuousness, and the Copenhagen interviewees mention a number of already known physical measures.

Interviewees in all countries suggest separate lanes for each road user group, a parking ban near crossroads and speed reducing measures as important for reducing accidents. These physical measures are supplemented by proposals concerning surveillance and enforcement of illegal parking and high vehicle speed. Furthermore, the situation around bus stops should be considered very carefully (DK and ES).

National differences appear. The road users from Barcelona suggest light signals instead of give-way-lines, red-green phases instead of flashing lights and better driving tests. The interviewees from Copenhagen suggest "green arrows" for turning traffic, cycle lanes in cross-roads painted blue - according to Danish Road Standards, and campaigns for car drivers' to make them pay more attention to cyclists. The Amsterdam road users suggest surveillance of lamps on bicycles, and propose to forbid all driving on separate tramways in Amsterdam.

Campaigns to increase road users' awareness of each other should be conducted, as well as campaigns focusing on law observance and more traffic education. Special information should be given to taxi drivers, riders of motorcycles and mopeds, bicycle couriers and bus drivers.

CONCLUSIONS

The results contribute in the following respects to the overall goal of the ADONIS project, based on suggestions from the road users themselves: in order to make cycling attractive, it is essential that cycle paths or cycle lanes are available. To the benefit of both cyclists and pedestrians it is important to make locations for crossing as safe as possible. Signalised crossings and light signals in connection to pedestrian crossing are a high priority request in all countries. Further green arrows for turning traffic and separate cyclist signals are proposed in Copenhagen and substitution of the flashing lights for cars by red lights in Barcelona. Finally, under- and overpasses are needed in Barcelona.

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CYCLIST SAFETY ON THE HUNGARIAN RURAL ROAD NETWORK: CAUSE ANALYSIS AND IMPROVEMENTS

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CYCLIST SAFETY ON THE HUNGARIAN RURAL ROAD NETWORK: CAUSE ANALYSIS AND IMPROVEMENTS

Cyclists obviously belong to the most vulnerable road users. Researches on this topics are therefore recently followed more and more carefully in Hungary. Issues of cyclist safety raise different questions on the urban (approx. 8400 km) and the rural (approx. 21600 km) sections of the national road network.

This review includes the principal basic data and figures of road traffic safety on the Hungarian road network, with special emphasis laid on bicycle roads and traffic. The accident category system applied currently in Hungary is briefly presented. The detailed cause analysis discusses more aspects, including age distribution of the cyclist accident victims, and presents the efforts of the Hungarian Road Administration in order to improve cyclist safety.

RADFAHRERSICHERHEIT AUF UNGARISCHEN LANDSTRASSEN: UNFALLURSACHENANALYSE UND VERBESSERUNGEN

Die Radfahrer gehören offensichtlich zu den schwächsten Straßenbenutzern. Deshalb wird der Erforschung dieses Themas in Ungarn in letzter Zeit immer mehr Aufmerksamkeit gewidmet. Das Anliegen der Verkehrssicherheit für die Radfahrer wirft in bezug auf den städtischen Anteil (ca. 8400 km) und den ländlichen Anteil (ca. 21600 km) des nationalen Straßennetzes unterschiedliche Fragen auf.

Dieser Bericht umfaßt die wichtigsten Daten und Zahlen zur Verkehrssicherheit im ungarischen Straßennetz und berücksichtigt insbesondere auch Radwege und den Fahrradverkehr. Des weiteren gehen wir kurz auf das gegenwärtig in Ungarn angewandte Unfallklassifikationssystem ein. Im Rahmen der detaillierten Unfallursachenanalyse werden weitere Aspekte einschließlich der Altersverteilung der Opfer von Fahrradunfällen präsentiert. Schließlich wird auf die Anstrengungen der ungarischen Straßenverkehrsbehörden zur Steigerung der Straßensicherheit für Radfahrer

VARNOST KOLESARJEV NA MADŽARSKEM PODEŽELJSKEM CESTNEM OMREŽJU: ANALIZA VZROKOV IN IZBOLJŠAV

Kolesarji spadajo med najbolj ranljive uporabnike cest. Na Madžarskem se zato vse pogosteje ukvarjamo z raziskavami na tem področju. Podatki o varnosti kolesarjev povzročajo na urbanih (pribl. 8400 km) in podeželskih (pribl. 21600 km) odsekih nacionalnega cestnega omrežja različna vprašanja.

Poročilo vključuje glavne podatke in številk o varnosti v cestnem prometu na Madžarskem s posebnim poudarkom na kolesarskih poteh in prometu. Kratko je predstavljen tudi sistem kategorizacije nesreč, ki je pred kratkim pričel veljati na Madžarskem. Detajlna analiza vzrokov razpravlja o večih aspektih, kot je npr. starost kolesarskih žrtev v nesrečah in predstavlja trud Madžarske uprave za ceste za izboljšanje varnosti kolesarjev.

CYCLIST SAFETY ON THE HUNGARIAN RURAL ROAD NETWORK: CAUSE ANALYSIS AND IMPROVEMENTS

1. INTRODUCTION

Cyclists belong to the most vulnerable road user group. Monitoring and continuous improvement of their road safety situation form also in Hungary a vital part of the National Traffic Safety Program. The number of bike users is lately continuously increasing, not least due to the efforts to improve their safety. At the same time there are still too much cyclist injuries on the road network, and the proportion of the cyclist fatalities is unacceptably high, especially on the rural sections of the national main roads.

2. ROAD NETWORK AND EXISTING CYCLE NETWORK OF HUNGARY

The total length of the Hungarian public road network is approximately 150.000 km, of which 30.000 km form the national road network, the other roads belong to the municipalities. The total length of the bicycle road network is 1100 km, situated primarily along highly trafficked urban main roads. The cycle roads constructed recently were always built with state and municipal co-financing, their maintenance is municipal responsibility. The bicycle road network of Hungary is developed more quickly than the public road network.

In Budapest, the capital city of Hungary, the total length of the bicycle road network is approximately 110 km. (The number of inhabitants is around 2,0 million.)

3. BICYCLE TRAFFIC

On the Hungarian national bicycle road network there were representative traffic counts in 1993 and in 1997. From the obtained data it is possible to see, that in more than 80% of the counting locations significant bicycle traffic increase was recorded. The daily bicycle traffic was classable in the countrywide located 63 representative cross-sections (covering all the significant cyclist regions of Hungary) into the following volume categories:

	<i>urban counting points</i>	<i>rural counting points</i>
<i>under 500 bicycles/day</i>	6	9
<i>500-1000 bicycles/day</i>	14	4
<i>1000-2000 bicycles/day</i>	17	3
<i>2000-5000 bicycles/day</i>	8	0
<i>over 5000 bicycles/day</i>	2	0

The summarized conclusions of the traffic survey in 1997 were following:

- The bicycle traffic volume is on the rural cycle roads much lower than on the urban sections.
- The cycling tourism is still not developed. The recreational bicycle traffic is much lower than the regular working or shopping traffic on the countryside. The majority of the bike trips is done by people who are frequent cycle users.
- The typical bike trip length is in 70% less than 5 km on the cycle roads having non-leisure traffic, while the leisure-type bike roads are often (36%) used by cyclists having a trip length over 10 km.

4. ROAD SAFETY DATA

The number of road accidents with personal injury and the number of persons injured due to and accident both show a slightly decreasing tendency in Hungary in the last 5 years. On the Hungarian roads there were recorded 19097 road accidents with personal injury in 1997, involving 26148 personal injuries. 6.5% of the accidents was fatal. (The number of injured persons per 1000 inhabitants was 2.6, the number of injured persons per 1000 motor vehicles was 87.)

Table 1: Number of persons injured in road traffic accidents in Hungary

1	2	3	4	5	6	7
years	Total number of persons fatally injured in road accident	Total number of persons injured in road accident	Total number of cyclists (driver+passenger) fatally injured in road accident	Total number of cyclists (driver+passenger) injured in road accident	Proportion of fatal injuries (Column 4 per Column 2) %	Proportion of injuries (Column 5 per Column 3) %
1993	1678	27107	215	3337	12,8	12,3
1994	1562	28524	220	3604	14,1	12,6
1995	1589	27476	225	3349	14,2	12,2
1996	1370	25309	221	3293	16,1	13,0
1997	1391	26148	184	3439	13,2	13,2
Average					14,0	12,6

The proportion of cyclists among the injured persons was more or less constant, a little bit over 12%. The proportion of cyclist victims among the fatally injured persons was swinging between 13% and 16%.

It is not possible to calculate the so called accident rate, which is frequently used to characterize the road traffic safety conditions. This is due to the lack of data concerning annual traffic volume of the bicycle fleet in Hungary.

The following Figure 1 and Figure 2 show the persons fatally injured due to road traffic accidents between 1993-1997, classified after their role in the traffic and the place of accident.

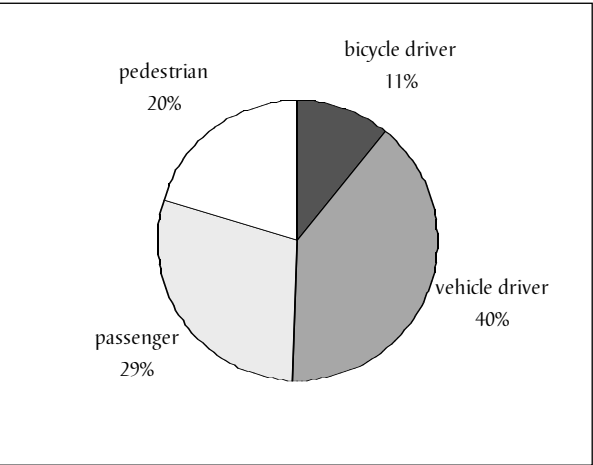


Figure 1
Fatalities on rural roads

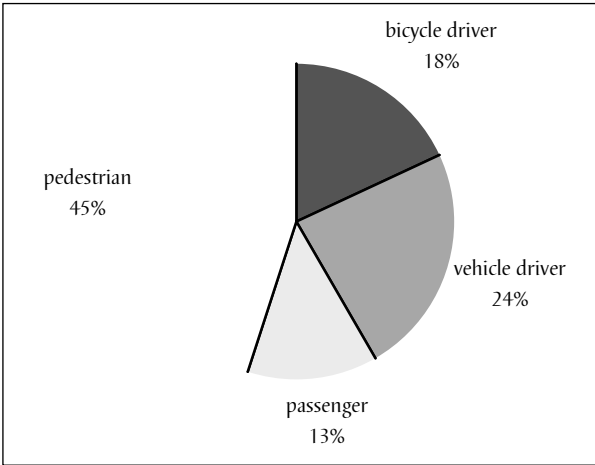


Figure 2
Fatalities on urban roads

Considering the numeric values it can be pointed out, that 38% of pedestrian fatalities and 45% of bicycle driver fatalities (and 69% of motor vehicle drivers) lost their lives in rural accidents.

5. ACCIDENT TYPE SYSTEM OF HUNGARY

The road accident type system of Hungary, which is much like the ones used in Western Europe, was elaborated in the second half of the 1970's. That system is with minor modifications used also today. According to the international practice, the accident situations (types) involving at least one bicycle form an own accident type group (800).

Table 2: Distribution of bicycle accidents according to accident type (1997)

Type	urban area	rural area	Total
811 – Collision of vehicles moving into the same direction, on straight road section	515	217	732
813 – Collision of vehicles moving into the same direction, on bending road section	35	16	51
815 – Collision of vehicles moving into the same direction, in intersection	200	26	226
812 – Collision of vehicles moving opposite, on straight road section	142	50	192
814 – Collision of vehicles moving opposite, on bending road section	41	11	52
816 – Collision of vehicles moving opposite, in intersection	110	10	120
822 – Collision of crossing vehicles, on straight road section	234	30	264
824 – Collision of crossing vehicles, on bending road section	20	4	24
817 – Collision of crossing vehicles, only one vehicle is turning	626	57	683
818 – Collision of crossing vehicles, both vehicles are turning	489	33	522
819 – Other bicycle accident	115	18	133
820 – Bicycle collision with railway rolling stock	6	1	7
821 – Bicycle collision with solid object	322	86	408
Total	2855	559	3414

According to Table 2 there are five times more bicycle accidents on urban areas than on rural road sections.

On urban areas about 50% of all the bicycle accidents happen between crossing vehicles. Collision between vehicles moving into the same direction has a share of 26%.

On rural road sections the most frequent bicycle accident situation is the collision of vehicles moving into the same direction (46%). Collision between crossing vehicles has only a share of 22%.

6. CAUSE ANALYSIS OF ACCIDENTS RESULTING CYCLIST FATALITY

Table 3: Number of cyclist fatalities on rural sections of the national road network, classified by accident cause (1993-1997)

1.	2.	3.	4.	5.
Code	cause of accident	cyclist fatality (1993-1997) Total	of which causative cyclist	% (Column 4 per Column 3)
111-117	Inappropriate travel speed	175	13	7
120-129	Negligence of overtaking rules	57	3	5
131-139	Negligence of priority rule	75	70	93
141-156	Infringement of rules of travelling, inflexion or turning	96	89	93
161-165	Negligence of stopping obligation	5	5	100
171-173	Infringement of illumination rules	6	5	83
181-185	Other fault of the driver (careless driving)	59	21	36
211-223	Vehicle failure	2	1	50
311-316	Roadway imperfection	1	1	100
411-417	Pedestrian fault	0	0	
511-514	Passenger fault	0	0	
611-619	Other cause	0	0	
Total		476	208	44

From Table 3 the following observations can be done:

- On the rural sections of the national road network the most frequent cause of the fatal cyclist accidents was that the vehicle running down the cyclist had inappropriate speed (drove too fast). In 93% of these cases the cyclist is guiltless victim.
- The next most frequent accident cause type was the infringement of rules of travelling, inflexion or turning, further the negligence of priority rule. In more than 90% of these cases was however the cyclist itself the causative of the accident.
- This two accident cause types include more than 73% of all the cases.

According to the on-site judgement of the police, 44% of all the rural road accidents involving cyclist fatality in that 5 years period were caused by the cyclists. Considering similar accidents on urban areas this proportion is even more, over 50%.

7. AGE DISTRIBUTION OF THE CYCLIST ACCIDENT VICTIMS

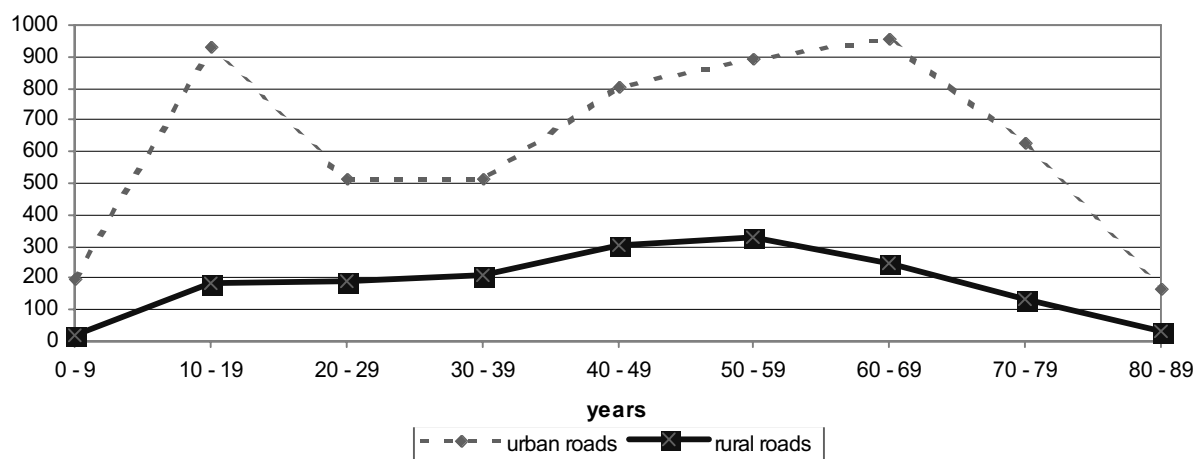


Figure 3: Number of fatally or seriously injured bicycle riders on rural and urban sections of the national road network, classified by age groups (1993-1997)

From Figure 3 it is clearly visible, that on the rural sections of the national road network the age group principally exposed to fatal or serious injury risk is between 40-59 years. They have 35% of all accidents and 43% of fatal accidents.

On urban areas the most "unsafe" group is between 50-69 years, but young cyclists between 10-19 years are in considerable danger as well.

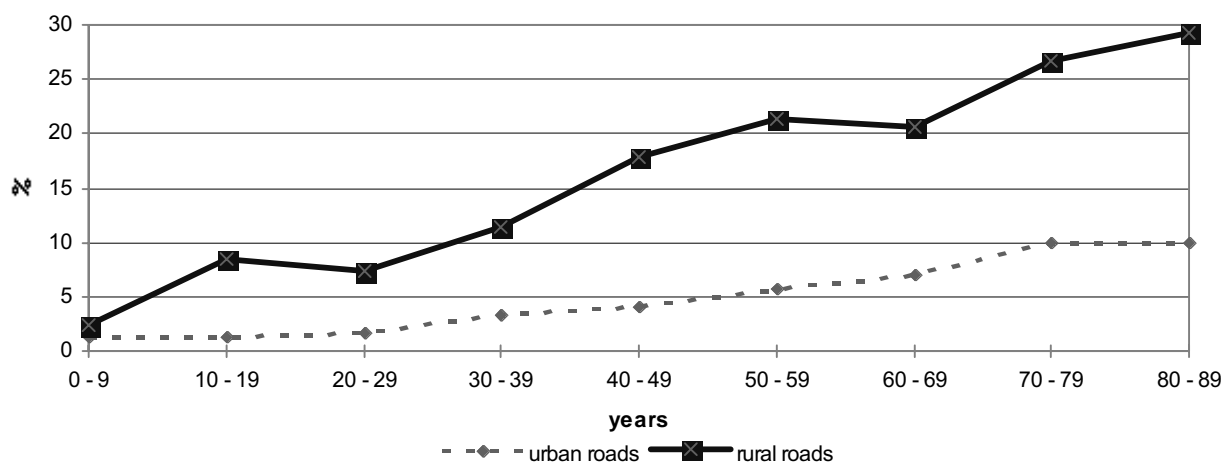


Figure 4: Severity index of cyclist injuries in the different age groups (1993-1997)

The definition of accident severity index is: number of fatal injuries divided by number of total injuries in the respective age group.

The severity index of cyclists injured on rural roads is in any age group well over the respective urban values. This is primarily to be explained by the higher speed of the vehicles. The other likely factor is the so called "underreporting", which is much higher among lightly injured cyclists on rural roads than on urban areas. According to the available data the fatal risk is clearly increasing with the age of the cyclist.

8. CONCLUSION

On the basis of the data assessment of the bicycle accidents on rural roads in Hungary the following conclusions can be made:

1. The number of bicycle accidents is less on the rural roads than on urban areas, primarily due to the lower cycle traffic volumes.
2. The most significant part of cyclist accidents happen on straight road sections between vehicles moving into the same direction, while on urban areas in intersections and between transversally moving vehicles.
3. The causes of those fatal cyclist accidents where the cyclist is guiltless victim originate in the overspeed and careless behaviour of the causative motor vehicle driver.
4. Cyclist fatalities are caused in 44% by the cyclist itself, primarily with the infringement of travelling, inflexion or turning rules, further the negligence of priority rule.
5. The most frequent age group of the fatally and seriously injured cyclists is between 40-59 years. Injuries are also considerable in the age group between 10-19 years.
6. The older the injured cyclist is, the greater is the severity index of the accidents.

The improvement of cyclist safety is only possible with the elaboration and execution of a complex series of measures. This comprises following (partly already in progress):

- In-depth road traffic safety assessment of the last 5 years, cause analysis
- Determination of risk exposure of the individual cycle road network elements, identification of dangerous locations
- Priority ranking at construction of new bicycle road sections with the common consideration of road pavement width, motor vehicle and bicycle traffic volumes
- In the frame of school education about traffic special emphasis on the basic rules and characteristics of cycling
- Social campaign and police enforcement against drunken cycle driving
- Emphasis on the importance of proper bike equipment (e.g. breaks, lighting) regarding personal traffic safety

NON RESTRICTIVE SAFETY MEASURES FOR CYCLISTS

Roelof Wittink

Roelof Wittink is psychologist and specialist in the field of behavioural change. At the Dutch Road Safety Institute SWOV, he was co-ordinator of the EU project Promising. Currently he is managing director of I-ce Interface for Cycling Expertise.



NON RESTRICTIVE SAFETY MEASURES FOR CYCLISTS

Road safety measures to protect vulnerable road users (pedestrians, cyclists) are often taken at the expense of their direct access to destinations and smooth mobility. This is contradictory to the aim of promotion of cycling. The EU commissioned a study to develop safety measures that are not restrictive and to calculate cost and benefits of different kind of measures.

Criteria for restrictiveness that have been developed in the project are related to e.g.:

- completeness and coherence of the network of facilities
- detours and delays
- comfort and complexity of the riding task
- visual quality and insecurity

The challenge is to find another balance between the demands of cyclists and other road users. The criteria for restrictiveness, measures and their costs and benefits, will be presented for discussion.

NICHT-RESTRIKTIVE SICHERHEITSMASSNAHMEN FÜR RADFAHRER

Straßensicherheitsmaßnahmen zum Schutz der schwächeren Straßenbenutzer (Fußgänger, Radfahrer) gehen oft auf Kosten deren direkten Zugangs zu ihren jeweiligen Zielpunkten und beeinträchtigen ihre freie Mobilität. Dies steht im Widerspruch zur gewünschten Förderung des Fahrradverkehrs. Die EU hat eine Studie in Auftrag gegeben, um nicht-restriktive Sicherheitsmaßnahmen zu entwickeln und Kosten und Nutzen verschiedener Arten von Maßnahmen zu ermitteln.

Kriterien für Restriktivität, die im Rahmen des Projekts erarbeitet wurden, beziehen sich beispielsweise auf

- Vollständigkeit und Zusammenhang des Anlagennetzes,
- Umleitungen und Verzögerungen
- Bequemlichkeit und Schwierigkeit der mit dem Fahrrad zu bewältigenden Strecke
- Visuelle Qualität und Unsicherheit

Die Herausforderung besteht darin, ein neues Gleichgewicht zwischen den Forderungen der Radfahrer und jenen der anderen Straßenbenutzer zu finden. Die Kriterien für Restriktivität, verschiedene Maßnahmen sowie deren Kosten und Nutzen werden zur Diskussion gestellt.

NERESTRIKTIVNI VARNOSTNI UKREPI ZA KOLESARJE

Ukrepi cestne varnosti za zaščito ranljivih uporabnikov cestišč (pešci, kolesarji) so pogosto oblikovani na račun njihovega neposrednega dostopa do cilja in nemotene mobilnosti. To je v nasprotju s promocijo kolesarjenja. EU je podprla študijo, ki bi razvila varnostne ukrepe, ki ne omejujejo, in izračunala stroške in prednosti različnih ukrepov.

Kriteriji omejevalnosti, ki so bili razviti v projektu, se nanašajo na:

- dokončanost in povezanost možnosti v omrežju
- obvozi in zamude
- izobilje in kompleksnost samega kolesarjenja
- vizualna kvaliteta in nezavarovanost

Iziv je poiskati drugačno ravnotežje med zahtevami kolesarjev in ostalimi uporabniki cestišč. Za diskusijo bodo predstavljeni kriteriji omejevalnosti, ukrepi in njihovi stroški in prednosti.

ENGLISH

DEUTSCH

SLOVENSKO

SAFE MOBILITY FROM THE VIEWPOINT OF THE CYCLIST

Now cycling is becoming more and more in focus when planning for our future, the discussion has come up how to create a new balance in our traffic and transport system between different modes of transport. Since the car had priority for so long, taking away space and freedom from others - with bad consequences for road safety, for the mobility of all who can not or do not want to use a car, for the environment, for health and so on - there is a need to think from scratch again. This is already reflected in some design manuals for the bicycle, in some mobility plans and in some new long term road safety plans, but these ideas have to become internalised on a wide scale. New proposals and implementation of traffic regulations show there is positive (e.g. Germany introducing cycle streets with priority for cyclists) and negative (e.g. Finland giving motor traffic more priority at cycle crossings) news. So how will the viewpoint of the cyclist become integrated in land use and urban planning, in traffic regulations and street design?

INTRODUCTION

The Directorate General for Transport, DG VII, of EU, asked in 1997 for proposals concerning the Development and Promotion of Measures to reduce the risks of injury to Vulnerable Road Users in a Non Restrictive way. Safety measures for e.g. cyclists are often restricting mobility, by planning residential areas far from destinations, by excluding cyclists from direct access to destinations, by creating long waiting times in favour of motorised traffic etc. Therefore the EU was interested in combining mobility and safety needs of cyclists and other vulnerable road users. The working group came up with a number of recommendations, the most essential listed below.

The Dutch Road Safety Research Institute SWOV is coordinator of this project called PROMISING, while VTT Finland coordinated the Work Package about Cycling.

CYCLISTS DO NOT HAVE TO BE VULNERABLE

Another EU report, Walcyng, of which the results also will be presented at Velo City 1999, already made clear that the promotion of the mobility and safety of cycling may go together very well. In the countries with the highest cycling mobility (Netherlands, Denmark), the risk of cycling is the lowest. Data from the city of Graz shows that an increase of the number of cycle trips by 50% between 1984 and 1995 was accompanied by a fall of casualties by 20%. Traffic calming and area wide speed reduction create a basis condition for these results, but also large numbers of cyclists change the traffic process and make other road users more aware of cyclists and effect driver expectations in a favourable way (Hydén, 1998).

Moreover, if we take into account the health effects of cycling, the society can only win when it takes care of mobility and safety needs of cyclists.

WHAT TO CONSIDER AS RESTRICTIVE?

Now the question is, what is a right non restrictive approach? The obligation of wearing special clothes and helmets, is restrictive. Although the research group considered that in some countries, cyclists might feel that a helmet is part of their outfit, the official promotion of helmets may already a restrictive measure by giving cycling a dangerous image.

Apart from the helmet use, of which the debate is already long standing, there are several other interesting discussions. E.g. Should cyclists be allowed to ride side by side? Is it wise to let cyclists ride on roads with a speed limit of 80 kilometers per hour or more? Do we have to oblige the use of lights and forbid to make use of the bicycle when the lights are broken? Should cyclists be allowed to ride in pedestrian shopping areas and if so, in what way should they respect the rights of pedestrians?

CRITERIA

The Promising-group proposes to review the criteria for our planning, such as for flow, accessibility and capacity for different modes of transport. For a non restrictive approach, the five quality criteria for bicycle facilities that are being used in the Dutch manual: "Sign up for the bike" (CROW, 1993), have been taken over:

1. Safety: actual and perceived dangers constitute a restriction. Although cyclists also have to be alert and anticipate on dangers, the burden has to be placed at most with the motorised road users. Also security and social safety problems, like in tunnels, should be avoided.

2. Coherence: creating some bicycle facilities is not enough, cyclists need a complete network of main routes and continuity of the way to go. Consistency of quality and recognizability are other criteria that have to be met.
3. Directness: Any safety measures resulting in extended travel time, detours and delays, are restrictive.
4. Comfort: criteria are smoothness of road surface, curving, gradients, number of stops and complexity of road safety measures.
5. Attractiveness: criteria are visual quality of the road, overview and variety of environment.

NEW HIERARCHY OF ROADS

In Sweden (Wramborg, P., 1998) and the Netherlands (SWOV, 1993), a new vision has been developed for road safety that provide conditions for a non restrictive approach. But the new traffic planning in this vision has to be specified according to mobility planning for cycling. The Promising group worked on this. In built up areas the division of roads concerns:

- roads for through traffic with a limit of 70 km/h
- main streets with a limit of 50 or 30 km/h
- residential streets with a limit of 30 km/h
- 'woonerfs', streets on which only walking speed is allowed
- lanes for pedestrians or bicycles

A through traffic route for cars is segregated from pedestrians and bicycle traffic, so they need their own through traffic network. A sufficient number of grade separated crossings facilitate direct access for all modes.

Alongside main streets, bicycle tracks and separate pedestrian pavements exist, for mobility and safety reasons. This is the only road category with bicycle tracks. There is always a crossing facility at an intersection between two of these roads.

A residential street has only pedestrian pavements and a narrow carriageway. It is natural to cross arbitrarily. At intersections, the bicycle has right of way if it is indicated that the road is part of the main network for cyclists.

A walking speed street is a street for meetings, play and recreation and traffic, by cars and two wheelers, is only 'guest'.

Reconstruction of our road system asks for time, but new investment plans should be in line with such a hierarchy of roads that constitute a real preventive approach for road safety.

At crossings, minor changes can already improve safety of cycling significantly. E.g. raised crossing, introduced at 44 junctions in Gothenborg, attracted 50% more cyclists and the safety improved by 20% due to the increased cycle flow and 10 - 50% due to the improved layout. (Leden et al., 1998).

REGULATIONS

Regulations have to be brought in line with the new planning. E.g. bicycle tracks should make it possible to ride side by side. In crossing areas, the speed for cars should be limited to 30 km per hour and there are several ways to give cyclists and pedestrians right of way. E.g. advanced stopping lines promote safety and mobility together. Contra flow cycling in one-way roads for cars should be allowed.

As a general rule but also to stimulate a good design of bicycle tracks, cyclists should be allowed to make use of the lanes for cars if this is more suitable.

OTHER MEASURES

Vehicle requirements contribute to safety. The design of cars and trucks have to be adapted to diminish the seriousness of injuries. Safety standards for bicycles should be reliable and sustainable and every bicycle you can buy, should be equipped with all the requirements that are prescribed.

Traffic education will be directed at showing the advantages and benefits of cycling and on the promotion of safe behaviour. This education is meant for anyone. Driver instruction should include the training of safe behaviour with respect to cyclists and pedestrians.

IMPLEMENTATION

For the implementation of measures, the context of a country, region or city must be taken into account, to be specified by:

1. The current level of cycling
2. The physical structure
3. The institutional support system (policies and facilities)

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Netherlands.

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A NEW GUIDELINE AS A STEP TOWARDS HARMONISED DESIGN OF CYCLING FACILITIES IN AUSTRIA

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A NEW GUIDELINE AS A STEP TOWARDS HARMONISED DESIGN OF CYCLING FACILITIES IN AUSTRIA

The document "Guidelines and Regulations for Road Building" plays an important role in planning processes and sets out the limits and possibilities for bike traffic in Austria. The legislative changes and the continual increase in the number of cyclists on the roads has made it necessary to revise these guidelines.

This revision is currently being finalised by selected experts; the aim is to ensure that new knowledge and insights are incorporated within practical guidelines. The revised guidelines have been restructured and expanded to account for (among other things) network elements - pedestrian zones, multipurpose traffic lanes, cycling routes which go up one-way streets etc.

NEUE RICHTLINIE FÜR DEN RADVERKEHR IN ÖSTERREICH - EIN SCHRITT ZUR EINHEITLICHE GESTALTUNG VON RADVERKEHRSANLAGEN

Die "Richtlinien und Vorschriften für den Straßenbau" sind in der Planung der Radverkehrsinfrastruktur ein wichtiges Instrument, welches den Rahmen und die Möglichkeiten für den Radverkehr in Österreich vorgibt. Durch gesetzliche Änderungen und eine stetig steigende Anzahl an Radfahrern wurde es notwendig diese Richtlinie zu überarbeiten.

Die Überarbeitung wird derzeit von ausgewählten Fachleuten durchgeführt, um neue Erkenntnisse in die Praxis umsetzen zu können. Die überarbeitete Richtlinie wurde neu strukturiert und unter anderem um neue Netzelemente im Streckenbereich (z.B. Fußgängerzone, Mehrzweckstreifen, Radfahren gegen die Einbahn) erweitert. Die Entwurfsgrundlagen und Netzelemente wurden unter Berücksichtigung internationaler Forschungsergebnisse überarbeitet und an österreichische Verhältnisse angepaßt.

NEUE RICHTLINIE FÜR DEN RADVERKEHR IN ÖSTERREICH - EIN SCHRITT ZUR EINHEITLICHE GESTALTUNG VON RADVERKEHRSANLAGEN

RECHTSLAGE UND RICHTLINIEN IN ÖSTERREICH

Das wichtigste Regelwerk für den Straßenverkehr in Österreich ist die österreichische Straßenverkehrsordnung (StVO) von 1960, die derzeit in der Fassung nach der 20. Novelle vorliegt. Sie bildet gemeinsam mit der Bodenmarkierungsverordnung den gesetzlichen Rahmen der Verkehrsplanung. Weitere den Verkehr betreffende Gesetzestexte, wie z.B. das Kraftfahrzeuggesetz und das Führerscheingesetz, sind für den Radverkehr nur sehr begrenzt von Bedeutung.

Richtlinien und Vorschriften für den Straßenbau (RVS)

Mit den Richtlinien und Vorschriften für den Straßenbau (RVS) gibt es in Österreich eine umfassende Sammlung von Richtlinien, die den gesamten Bereich der Straßenverkehrs von Planung über Bau und Erhaltung abdecken. Der zuständige Bundesminister kann einzelne Kapitel der RVS für verbindlich erklären. Dies ist vor allem für Richtlinien, die den Bundesstraßenbau betreffen, der Fall.

Die anderen Teile der RVS, die nicht direkt mit Bundesstraßen in Verbindung stehen, sind nicht verbindlich. Auch diese werden in der Praxis häufig als Richtlinie verwendet, obwohl keine Behörde und kein Planer zur Einhaltung der Empfehlungen verpflichtet ist.

Radverkehr in der RVS

Da die RVS ursprünglich ihren Schwerpunkt in der Regelung des Baus von Straßen hatte, sind verkehrsplanerische Aspekte weniger detailliert ausgeführt. Der Radverkehr ist dementsprechend in der RVS nur ein Randthema. Das Kapitel 3.56 Radwege ist derzeit - zusammen mit Bushaltestellen und Parkplätzen - unter Nebenanlagen und sonstige Verkehrsflächen eingeordnet.

Das Kapitel 3.561 Einsatzkriterien für die Errichtung von Rad- und Gehwegen (Neufassung 1990) ist für Bundesstraßen verbindlich erklärt worden. Es legt die Angebots- und Bedarfskriterien fest, die erfüllt werden müssen, damit Bundesmittel für den Bau von Radwegen an Bundesstraßen zur Verfügung gestellt werden.

Das Kapitel 3.562 Planung, Entwurf und Bau hingegen ist nicht verbindlich. Es gibt die Planungs- und Entwurfsgrundlagen dar, die im Jahre 1988 dem aktuellen Stand der Technik entsprachen.

AKTUELLE ENTWICKLUNG DES RADVERKEHRS IN ÖSTERREICH

Seit Mitte der 80er Jahre haben sich viele Ansichten in der Radverkehrsplanung geändert. Erkenntnisse der Verkehrssicherheitsforschung aber auch Finanzierungsprobleme der Gemeinden gestalteten den Bau echter Radwege im verbauten Gebiet zunehmend schwieriger.

Neue und billigere Lösungen auf der Fahrbahn und die Umsetzung der Erkenntnisse der internationalen Radverkehrsforschung werden vermehrt gefordert.

19. Novelle zur StVO

Mit der 19. Novelle zur StVO im Jahre 1994 wurden zahlreiche Bestimmungen für den Radverkehr neu festgelegt. Die Vorrangregelungen auf Radfahranlagen wurden grundlegend geändert, weiters wurde der Mehrzweckstreifen als neues Netzelement eingeführt. Die Bestimmungen zum Radfahren in Fußgängerzonen und gegen die Einbahn wurden ebenfalls modifiziert.

In der alten Radverkehrs-RVS waren echte Radwege das wichtigste Netzelement, andere Führungsformen wurden nur am Rande erwähnt. In Österreich besteht derzeit eine große Unsicherheit über neue Möglichkeiten der Radverkehrsführung wie Radfahrstreifen und Radfahren gegen die Einbahn. Aufgrund einer fehlenden, verbindlichen Richtlinie und rechtlicher Unklarheiten gibt es große Meinungsverschiedenheiten zu diesen Netzelementen. Deshalb werden in vielen Gebieten Radverkehrslösungen auf der Fahrbahn nur sehr zögerlich realisiert.



In Österreich gelten für den Radverkehr einige besondere Regelungen:

- genereller Vorrang auf Radfahranlagen (das sind: Radfahrstreifen, Mehrzweckstreifen, Radweg, Geh- und Radweg und Radfahrerüberfahrt): Solange der Radfahrer diese nicht verläßt, hat er Vorrang gegenüber dem Kfz-Verkehr, am Ende oder beim Verlassen einer Radfahranlage hat der Radfahrer Nachrang gegenüber dem Fließverkehr.
- Der Mehrzweckstreifen ist als Radfahrstreifen auf schmalen Fahrbahnen definiert. Er entspricht damit einem Suggestiv- oder Angebotsstreifen, ist aber eine Radfahranlage mit allen geltenden Sonderregelungen (Benutzungspflicht, Vorrang).
- Das Ende eines Radfahrstreifens und Mehrzweckstreifens ist mit einer Bodenmarkierung mit dem Schriftzug „ENDE“ zu kennzeichnen.
- Auf einer Radfahrerüberfahrt (Blockmarkierung) hat ein Radfahrer dieselben Vorrechte wie ein Fußgänger am Schutzweg, er darf allerdings nicht schneller als 10 km /h fahren.

Radverkehr in Österreich

Die Voraussetzungen für den Radverkehr in Österreich sind sehr unterschiedlich. Der Radverkehrsanteil der Städte Österreichs ist zwischen 3 und 20 % weit gestreut. Im Osten Österreichs verschwand der Radverkehr in den siebziger Jahren in einigen Städten völlig von der Straße. In diesen Gebieten sind nach der Wiederentdeckung des Fahrrades in den achtziger Jahren Zweirichtungsradwege, die oft auf Kosten des Fußgängerverkehrs errichtet wurden, die übliche Führungsform. Andererseits gibt es Städte, die schon seit Jahren Erfahrungen mit Radverkehrslösungen auf der Fahrbahn gesammelt haben. Zusätzlich gibt es ländliche Gebiete, in denen auch ohne Radverkehrsanlagen der Radverkehrsanteil vergleichsweise hoch liegt.

Bedingt durch die Vorreiterrolle Österreichs im Radtourismus gibt es ein ausgebautes Netz von überregionalen Radwegen, die speziell für den Freizeitverkehr errichtet wurden.

DIE NEUE RADVERKEHRS-RICHTLINIE

In den vergangenen Jahren wurde eine neue Richtlinie für den Radverkehr erarbeitet, die derzeit in einer ersten Rohfassung vorliegt. Das Ziel dieser Richtlinie war ein für Planer und Behörden verständliches Werk, das die wichtigsten Möglichkeiten und Problemlösungen der Radverkehrsplanung behandelt. Besonderer Wert wurde darauf gelegt, daß die Vorgaben auch tatsächlich in der praktischen Planung in Österreich umsetzbar sind.

Vorbild für die Neubearbeitung waren die aktuellen Planungshandbücher aus Deutschland (ERA 95) und den Niederlanden (Radverkehrsplanung von A bis Z) sowie andere Richtlinien aus Europa. Bei der Übernahme bewährter ausländischer Richtlinien mußte jeweils die Anpassung an die Österreichische Rechtslage berücksichtigt werden.

Die neue Radverkehrs-Richtlinie umfaßt die Planung eines Radverkehrsnetz, die Darstellung der Organisationsformen und Netzelemente, Einsatzkriterien, Planungsgrundlagen für Streckenbereich und Knotenpunkte sowie begleitende Einrichtungen.

Einsatzkriterien

Für das aktuelle Problem der fehlenden Einsatzkriterien für Radwege, Radfahrstreifen und Mehrzweckstreifen konnte in der Fachliteratur keine befriedigende Lösung gefunden werden. Aus den Niederlanden und der Schweiz, die diese Radverkehrslösungen auf der Fahrbahn schon länger praktizieren, liegen klare Einsatzhinweise vor - diese sind jedoch aufgrund der unterschiedlichen Rechtslage und Verkehrskultur nicht 1:1 auf Österreich umlegbar. Aus Deutschland, das beim Einsatz von Radverkehrslösungen auf der Fahrbahn einen mit Österreich vergleichbaren Entwicklungsstand hat, waren keine einfachen, passenden Einsatzhinweise verfügbar.

Es wurde daher versucht, aus den vorliegenden Erkenntnissen ein Diagramm mit den Eingangsgrößen Kfz-Geschwindigkeit und Kfz-Verkehrsstärke zu erstellen.

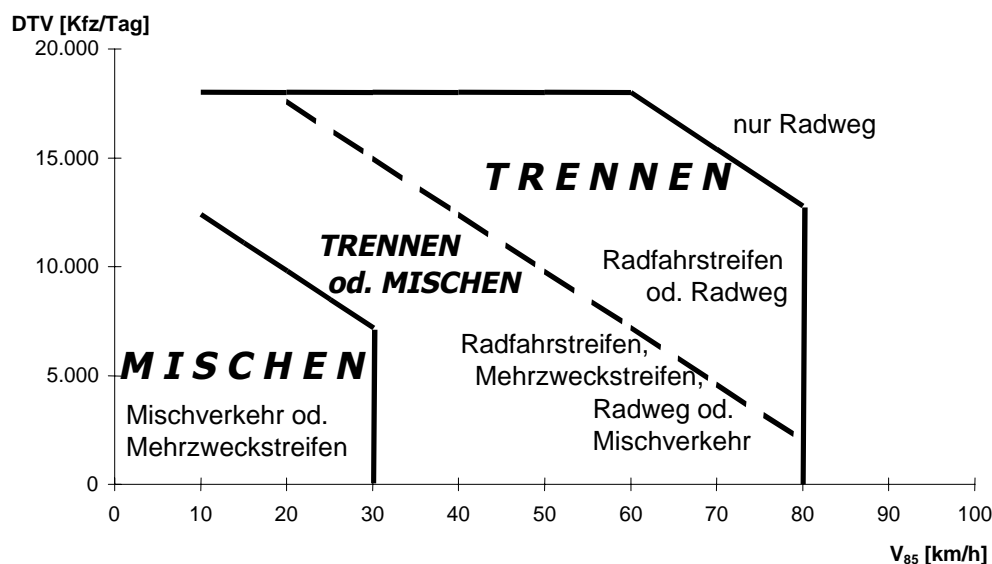


Abbildung 1: Hinweise für die Mischung bzw. Trennung von Rad- und Kfz-Verkehr

Aufgrund dieses Diagramms soll eine grobe Eingrenzung der Einsatzmöglichkeiten von Radwegen, Radfahrstreifen und Mehrzweckstreifen ermöglicht werden, weitere Kriterien wie Lkw-Verkehr, Flächenverfügbarkeit und Umfeld sind zusätzlich zu berücksichtigen. Im Diagramm gibt es einen relativ breiten Bereich, in dem sowohl Trennverkehr als auch Mischverkehr denkbar ist; die Einsatzgrenzen der Anlagen werden deutlich ersichtlich (z.B. unter 30 km/h kein Trennverkehr, über 80 km/h und über 18.000 DTV nur Radwege).

Streckenbereich

Bei den Netzelementen im Streckenbereich wurden neben einer Überarbeitung der Kapitel Radwege und Radfahrstreifen auch ausführliche Planungshinweise zum Mehrzweckstreifen und Radfahren gegen die Einbahn formuliert. Zu Gestaltungshinweisen und Breitenangaben für Radfahranlagen auf der Fahrbahn, die in der alten Radverkehrs-RVS sehr ungenügend behandelt wurden, konnten für Österreich geeignete Lösungen gefunden werden. Für den Mehrzweckstreifen wurden erstmals Breitenrichtwerte festgelegt.

Tabelle 1: Richtwerte für die Breite von Radfahrstreifen

Radfahrstreifen	$V_{85} \leq 50 \text{ km/h}$		$V_{85} > 50 \text{ km/h}$	
	Standard	Mindestbreite	Standard	Mindestbreite
neben Bordstein	1,50 m	1,20 m	1,75 m	1,50 m
neben Längsparkstreifen	1,75 m	1,50 m	2,25 m	2,00 m

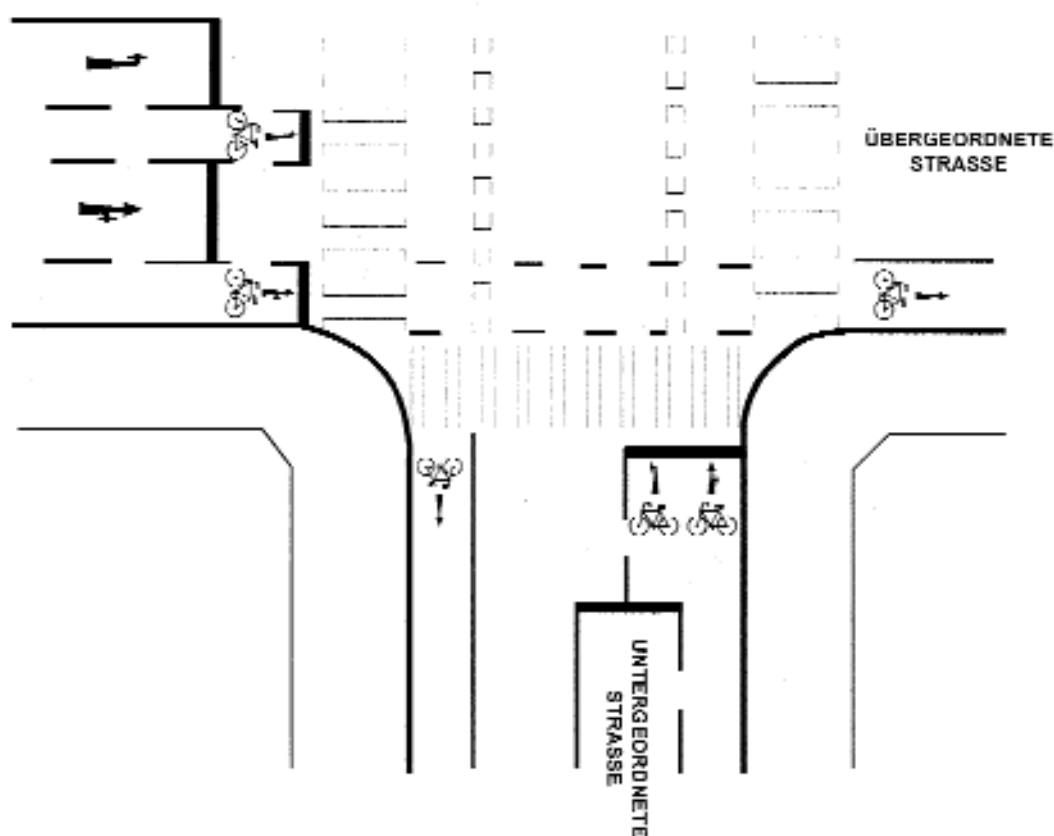
Tabelle 2: Richtwerte für die Breite von Mehrzweckstreifen

Mehrzweckstreifen	Standard	Mindestbreite
neben Bordstein	1,50 m	1,20 m
neben Längsparkstreifen	1,75 m	1,50 m
Kernfahrbahn	4,50 - 5,50 m	3,50 m

Auch Fahrstreifenbreiten im Mischverkehr und Probleme für Radfahrer bei Maßnahmen zur Verkehrsberuhigung sind ausgeführt. Bei der Mischung und Trennung zwischen Radfahrern und Fußgängern konnten neueste Erkenntnisse aus Österreich z.B. zum Radfahren in Fußgängerzonen eingearbeitet werden. Die in Österreich gesetzlich mögliche - aber

Abbildungen dargestellt. Bei der Ausarbeitung dieses Kapitels zeigte sich die großen Unklarheiten mit den derzeitigen Bestimmungen der StVO besonders deutlich.

Besonders die Markierung von Radfahrerüberfahrten und die Führung von Radfahrstreifen bzw. Mehrzweckstreifen im Kreuzungsbereich sind in Österreich nicht klar genug geregelt, sodaß einige Behörden diese Anlagen derzeit gar nicht realisieren, um Rechtsproblemen zu vermeiden. Selbst die Fachleute im Arbeitskreis konnten erst nach ausgiebigem



Sonderlös
werden d

efahren

ZUSAMMENFASSUNG

Mit der derzeitigen Rohfassung der Radverkehrs-Richtlinie liegt eine Planungsrichtlinie für Österreich vor, die der aktuellen Entwicklungen der Radverkehrsplanung gerecht wird. Die rechtlichen Unklarheiten, die derzeit in Österreich vielerorts eine Weiterentwicklung des Radverkehrs verhindern, werden entsprechend berücksichtigt. Damit kann endlich wieder eine gesicherte Basis für die praktische Arbeit geschaffen werden.

Auch wenn diese Richtlinie zu Planung, Entwurf und Bau von Radverkehrsanlagen nicht verbindlich angewendet werden muß, wird von den Verfassern erhofft, daß die neue Richtlinie von Planern und Entscheidungsträgern in Zukunft vermehrt genutzt wird. Sie stellt ein wichtiger Schritt zur Verbesserung der Radverkehrsanlagen dar, damit die Förderung des Radverkehrs in Österreich auch in Zukunft fortschreiten kann.

NEW CYCLING REGULATIONS IN GERMANY

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NEW CYCLING REGULATIONS IN GERMANY

The experience in Germany, particular in the Bundesland Nordrhein-Westfalen in the past has shown that an advance cycling infrastructure is to achieve not only by building particular cycle paths beside the road.

Great expense for cycle paths but not sufficient road safety. So there were 1998 built a taskgroup in Germany with engineers, jurists and policemen for making advance bicycle friendly and safety traffic regulations. The outcome by the task group laid before the German Parliament (Bundesrat).

The Parliament agreed to the new regulations (Straßenverkehrs-Ordnung) after that they came to effect in September 1997.

New regulations in detail:

1. New rules for using cycle paths
2. Cycling in one-way-streets
3. Cycling roads
4. Particular cycle lanes (defence lanes)
5. Cycling and buslanes
6. Steering bicycle traffic on junctions
7. Bicycles and pedestrian

NEUE BESTIMMUNGEN FÜR RADFAHRER IN DEUTSCHLAND

Die Erfahrung in Deutschland, insbesondere im Bundesland Nordrhein-Westfalen, hat gezeigt, daß eine Förderung der Fahrradinfrastruktur nur möglich ist, indem man separate Radwege neben der Straße anlegt.

Große Ausgaben für Radwege reichten jedoch nicht, um eine angemessene Straßensicherheit zu gewährleisten. Deshalb wurde 1998 in Deutschland eine Taskgroup eingerichtet, der Techniker, Juristen und Polizeibeamte angehörten, um für radfahrerfreundliche und sichere Verkehrsvorschriften zu sorgen. Das Ergebnis der Taskgroup wurde dem Bundesrat vorgelegt. Der Bundesrat nahm die neue Straßenverkehrsordnung an, die schließlich im September 1997 in Kraft trat.

Die neuen Bestimmungen im Detail:

1. Neue Vorschriften für die Benutzung von Radwegen
2. Radfahren in Einbahnstraßen
3. Fahrradstraßen
4. Spezielle Radspuren (Schutzspuren)
5. Radfahren und Busspuren
6. Steuerung des Fahrradverkehrs an Kreuzungen
7. Fahrräder und Fußgänger

NOVI KOLESARSKI PREDPISI V NEMČIJI

Izkušnje v Nemčiji, še posebej v zvezni deželi Nordrhein-Westfalen, kažejo, da izboljševanje kolesarske infrastrukture ne pomeni le izgradnje kolesarskih stez ob cestah. Takšne steze so drage, vendar ne zagotavljajo željene varnosti. Zato se je leta 1998 v Nemčiji oblikovala delovna skupina, ki vključuje inženirje, pravnike in policiste, njena naloga pa je izdelati predpise, ki bodo zagotovili kolesarjem prijaznejši in varnejši promet.

Rezultat je delovna skupina predložila nemškemu parlamentu (Bundesrat). Parlament je preloge potrdil in novi prometni predpisi (Straßenverkehrs-Ordnung) so stopili v veljavo septembra 1997.

Novi predpisi vsebujejo pravila za:

1. uporabo kolesarskih poti
2. kolesarjenje v enosmernih ulicah
3. kolesarske ceste
4. posebne kolesarske steze (zaščitne pasove)
5. kolesarjenje na avtobusnih pasovih
6. vodenje kolesarskega prometa na križiščih
7. kolesarjenje in pešačenje

DIE BERÜCKSICHTIGUNG DES RADFAHRERS IM NEUEN BRASILIANISCHEN BUNDESVERKEHRSGESETZ

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TUESDAY

ENGLISH BICYCLE FRIENDLY TRAFFIC REGULATIONS AND GUIDELINES

Brazil has roughly 160 million inhabitants, 40 million bicycles and 25 million motorized vehicles. The industries have eliminated safety equipments, except the brakes. The bicycles have been circulating without reflectors, bells, lights and mirrors. The official accidents data records no longer identify the participation of bicycles. The transportation investments policy is focused on the automobile system, minimizing the railroads and the safety of pedestrians and cyclists. Bikelanes were never implanted. In 1993, the city of São Paulo (10 million inhabitants) started a program called "Cyclist Project",

aiming the construction of bikelanes and giving to the activity the importance it deserves. As a result of the project the

DEUTSCH DIE BERÜCKSICHTIGUNG DES RADFAHRERS IM NEUEN BRASILIANISCHEN BUNDESVERKEHRSGESETZ

Brasilien, mit 160 Millionen Einwohner, hat zirka 40 Millionen nicht registrierte Fahrräder und 25 Millionen Kfz. In der Fahrradindustrie hat man die Schutzausrüstungselemente, mit Ausnahme der Bremsen, abgeschafft. Man verkehrt ohne Schelle, Licht, Rückstrahler und Spiegel. Die Unfallstatistiken haben keine Radfahrer mit einbegriffen wegen Vermerkungs-mangel am Vorfalldformular. Die Strassenbauinvestitions und betriebsspolitik richtet sich dem Kfz Verkehr entgegen, womit der Schienentransport und die Nichtmotorisierte Verkehrssicherheit für Fussgänger und Radler benachteiligt bleibt. Radstreifen und Radwege wurden nie geschaffen. In 1993 hat die Stadtverwaltung von São Paulo - 10 mio Einwohner - das Program "Projeto Ciclista" (Radfahrerprojekt) begonnen um den Radverkehr zu unterstützen. Als Erfolg, hat der neue Bundesverkehrskodex ab 1997 etwa 20 Artikel und Paragraphen anerkannt um den umweltschonenden, individuellen, nichtmotorisierten Radtransport zu entwickeln.

UPOŠTEVANJE KOLESARJEV V NOVEM BRAZILSKEM ZVEZNEM PROMETNEM ZAKONU

Brazilija ima pribl. 160 milijonov prebivalcev, 40 milijonov neregistriranih koles in 25 milijonov motornih vozil. Industrija koles je, z izjemo zavor, odpravila vso zaščitno opremo. Kolesarji se vozijo brez zvoncev, luči, odsevnikov in ogledal. Statistika ne vsebuje podatkov o ponesrečenih kolesarjih, ker na formularjih o nesrečah ne obstaja zaznamek, ali

nesrečo vpleten kolesar. Politika vlaganja v gradnjo cest in gospodarska politika se nagibata na stran motornih vozil, medtem ko so železniški promet, kot tudi varnost kolesarjev in pešcev zapostavljeni. Pri gradnji cest niso nikoli načrtovali kolesarskih poti. Leta 1993 je mestna uprava Sao Paula (10 milijonov prebivalcev) pričela s programom "Kolesarski projekt", katerega cilj je bila konstrukcija kolesarskih poti in podpora kolesarjenju. Program je bil uspešen, saj vsebuje novi zakonik o zveznem prometu okoli 20 členov, ki govorijo o razvoju okolju prijaznega, individualnega in nemotoriziranega kolesarskega prometa.

DIE BERÜCKSICHTIGUNG DES RADFAHRERS IM NEUEN BRASILIANISCHEN BUNDESVERKEHRSGESETZ

1. EINFÜHRUNG

Brasilien hat bei einer Größe von 8,5 Mio km² und etwa 160 Mio Einwohner z.Z. 26,6 Kraftfahrzeuge, die sich hauptsächlich in den urbanen Zentren des Südens konzentrieren. Das Bundesjustizministerium hat für 1995 folgende Unfallziffern veröffentlicht:

				%
Tote*)	25.500	Fussgänger	11.100	43,5
		Fahrer	8.700	34,0
		Mitfahrer	5.700	22,4
Verletzte	321.000			
Unfälle mit Geschädigten	255.500	Kollisionen	105.000	41,0
		Fussgänger	71.000	27,7
		Andere	80.000	31,3

*) Bemerkung

44% sind an- bzw überfahren worden, 77% sind männliches Geschlechts, 42% sind in der Altersklasse zwischen 15 und 34 Jahre, 11% sind Kinder bis 15 Jahre

Von den 419.000 an Unfällen beteiligten Fahrzeugen war der prozentuale Anteil der Fahrzeugarten wie folgt:

PKW	56%	Busse	12%	andere	6%
LKW	13%	Motorrad	9%	unbekannt	4%

Die Unfallquote (Tote/10.000 KFZ) belief sich 1995 auf 9,6 gegenüber 11,3 im Jahre 1991. In diesem Jahr war die KFZ-Flotte um 6 Mio Fahrzeuge geringer. In der o.g. Unfallstatistik werden Unfälle mit nicht motorisierten Fahrzeugen unter "Andere" aufgeführt. Über die Beteiligung von Radfahrern an der nationalen Unfallstatistik bestehen ansonsten keine genaueren Daten. Man schätzt die Gesamtflotte Brasiliens auf 45 Mio Fahrräder, wobei zwischen 1995 und 1998 ca. 18,5 Mio Neukäufe getätigt wurden.

2. AKTUELLE SITUATION

Die "Automobilisierung" Brasiliens begann 1955 mit der Errichtung einer eigenen Automobilindustrie und dem Ausbau des Straßennetzes, auf dem gegenwärtig der Großteil des Personen- und des Massengütertransportes abgewickelt wird. Bahn- U-Bahn- und Wasserstrassentransporte spielen auf regionaler sowie lokaler Ebene eine noch untergeordnete Rolle.

Das Fahrrad hat besonders in den armen Bevölkerungsschichten und im ländlichen Bereich eine gewisse Bedeutung. Für die Volksmobilität vor allem in den mittlerweile hoffnungslos verstopften Metropolen Südbrasilien leistet es bisher jedoch keinen signifikanten Beitrag, u.a. auch in Folge seines soziokulturellen Images als Fortbewegungsmittel der ärmeren Bevölkerungsteile. Von Seiten der politischen Entscheidungsträger wurden nie große Anstrengungen hinsichtlich Förderung einer fahrradgerechten Infrastruktur, der Verbesserung der Verkehrssicherheit bzw. Verkehrserziehung gemacht. So stehen ca. 3/4 der brasilianischen Fahrradflotte ungenutzt in Hinterhöfen und Speichern.

Einen ersten Lichtblick stellt das neue Bundesverkehrsgesetz dar, das erstmalig den Fahrradfahrer explizit berücksichtigt und ihm Rechte im Strassenverkehr einräumt. Dennoch sind einerseits neue Gesetze und andererseits deren Durchsetzung zwei verschiedene Welten, und es wird noch einige Zeit dauern, bis Infrastruktur- und Verkehrsbehörden die Rechte der Fahrradfahrer internalisiert haben.

3. DAS NEUE BUNDESVERKEHRSGESETZ

Der Anstoß zur Erlassung eines neuen Verkehrsgesetzes besteht ohne Zweifel in dem traurigen Umstand, daß Brasilien mit fast 50.000 Verkehrstoten pro Jahr bei einer Flotte von 26 Mio KFZ Weltmeister in der Unfallstatistik ist. Dem alten Verkehrsgesetz von 1966 fehlten Instrumente des Strafvollzuges gegenüber Verkehrsdelikten und gefährlicher bzw. verantwortungsloser Handlungsweise am Steuer. Im Abgeordnetenhaus wurde 1994 ein ausführlicher Gesetzestext abgestimmt, der noch vom Senat verabschiedet werden musste. Vor der Verabschiedung wurden im Zuge der Velo-City Konferenz in Basel 1995 mittels einer Conference Resolution die Teilnehmer aufgefordert, in ihren Ländern für eine nachhaltige Verkehrsentwicklung einzutreten. Im Falle Brasiliens wurden ca 100 Vorschläge unterbreitet, von denen 20

im neuen Verkehrsgesetz Berücksichtigung gefunden haben.

Der wichtigste Akteur dabei war das Umweltamt der Stadt São Paulo. São Paulo, als größte Stadt Brasiliens mit ca. 10 Mio Einwohnern und 3,2 Mio KFZ, die auf einen ca 14.000 km umfassenden Strassennetz rollen, besitzt 3,5 Mio Fahrräder bei nur 26 Km (!) Fahrradwegen, der Großteil davon in öffentlichen Parks.

Das neue Verkehrsgesetz trat Anfang 1998 in Kraft. Die wesentlichen Elemente der Gesetzes lauten zusammengefasst wie folgt:

- i - Die staatlichen Exekutivorgane bestimmen in ihren jeweiligen Kompetenzbereichen über die Transportinfrastruktur bzgl. Auto-, Fussgänger-, Tier- und Radverkehr, einschließlich Radwegbau und entsprechender Ausschilderung sowie über die Förderung der Sicherheit aller Verkehrsteilnehmer.
- ii - Der Autofahrer muß Fußgängern und Radfahrern unter Berücksichtigung der Vorfahrtsregeln sowie Sicherheits- und Wetterfaktoren Vorfahrt gewähren.
- iii - Sofern keine Radwege oder für Radfahrer befahrbare Seiten- und Standstreifen vorhanden sind, ist für den Radfahrer die Benutzung des rechten Fahrbahnrandes entsprechend den geltenden Verkehrsregeln vorgeschrieben. Die Behörden können den Fahrradverkehr in Gegenrichtung regeln, sofern dafür gesonderte Radwege oder Fahrstreifen ausgewiesen sind.
- iv - Die Benutzung von Fuss- und Gehwegen durch Fahrradfahrer ist erlaubt, sofern diese ordnungsgemäß ausgewiesen und ausgeschildert sind.
- v - Bei Benutzung von Fuss- und Gehwegen durch Radfahrer (schiebend) finden die entsprechenden Rechte und Pflichten eines Fußgängers Anwendung.
- vi - Zur Pflichtausstattung des Fahrrades gehören Fahrradklingel, Reflektoren (vorne, hinten, seitlich und an den Pedalen) sowie ein linksseitig befestigter Rückspiegel.
- vii - Die Zulassung und entsprechende Registrierungen für nicht motorisierte Verkehrsmittel obliegen den Kommunalbehörden.
- viii - Mittelschwere Verstöße gegen das neue Bundesverkehrsgesetz werden mit Geldbußen bis zu ca 80 US\$ sowie Eintrag von 4 Punkten*) in die Verkehrssünderkartei geahndet, hierzu gehören:
 - das Unterschreiten des Mindestabstandes von 1,5 m beim Überholen eines Fahrradfahres durch KfZ,
 - ein nicht verkehrsgerechtes Verhalten des Radfahres durch z.B. Freihändigfahren,
 - ein übermäßiger bzw. ungesicherter Gepäcktransport,
 - die Mitnahme von Personen ohne entsprechende Sitzgelegenheit,
 - die Benutzung von Schnell- und Landstrassen ohne Seitenstreifen oder Fahrradspur,
 - die Befahrung von zweispurigen Strassen entgegen der vorgeschriebenen Fahrtrichtung.
- ix - Schwere Verstöße gegen das neue Bundesverkehrsgesetz werden mit Geldbußen bis zu ca. 120 US\$ sowie Eintrag von 5 Punkten*) in die Verkehrssünderkartei geahndet, hierzu gehören:
 - Die Nichtreduzierung der Fahrgeschwindigkeit, um einen sicheren Überholvorgang eines Fahrrades zu gewährleisten.
- x - Fahrradhersteller, Verkäufer und Importeure müssen beim Verkauf die vorgeschriebene Sicherheitsausstattung sowie die allgemein gültigen Verkehrsregeln mitliefern. Ab dem 1.1.2000 ist diese zusätzliche Ausstattung beim Kauf eines Fahrrades obligatorisch.

***) Beim Erreichen von 20 Punkten innerhalb eines Jahres wird der Führerschein eingezogen.**

4. DISKUSSION

In der Diskussion des neuen Bundesverkehrsgesetzes stehen folgende Fragen offen:

- Ist die gesetzliche Forderung hinsichtlich einer Anbringung von Fahrradklingel, Rückspiegel sowie Reflektoren seitens des Herstellers oder Vertreiber übertrieben?
- Ist es ein Versäumnis, daß das neue Gesetz keine Helmpflicht für Fahrradfahrer vorsieht?
- War die Ablehnung der Forderung nach Bürgersteigbenutzung durch Kinder bis zu einem Alter von 10 Jahre und Erwachsene bei entsprechender Verhaltensweise gegenüber den Fussgänger gerechtfertigt ?

5. SCHLUSSFOLGERUNGEN

Die Suche nach Alternativen im Verkehrs und Transportwesen läßt ohne Zweifel das bewährte Verkehrsmittel Fahrrad wieder in die Diskussion kommen, auch in den überbevölkerten und schlecht organisierten Metropolen der Schwellen- und Entwicklungsländer. Brasilien hat durch sein neues Verkehrsgesetz einen Schritt in Richtung der gesetzlich- institutionellen Verbesserung hinsichtlich des nicht-motorisierten Individualverkehrs, speziell des Fahrradverkehrs, gemacht. Das Gesetz wird nur an Bedeutung gewinnen können, wenn die Sicherheit und Machbarkeit des Fahrradfahrens gewährleistet ist.

Dies kann und muß anfänglich durch Gesetze und deren Verordnung geregelt werden, ist aber speziell in Ländern mit verkehrspolitischen Vollzugsdefiziten nur ein bescheidener Anfang. Die Investitionen in eine wirksame Fahrradinfrastruktur mit ausgebauten Wegen und entsprechender Beschilderung können sich sicherlich in Zukunft durch die Zugewinne hinsichtlich Lebens- und Umweltqualität, Volksgesundheit, Zeit- und Geldersparnis bezahlt machen. Bis dahin müssen speziell in Brasilien große Anstrengungen im Bereich Basis-, Verkehrs- und Umwelterziehung, gemacht werden. Weiterhin müsste ein kulturelles Umdenken innerhalb der dem Götzen Auto verhafteten Gesellschaft Brasiliens stattfinden.

ORIGINAL BIKE PLANNING IN A RURAL AREA IN BELGIUM

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ORIGINAL BIKE PLANNING IN A RURAL AREA IN BELGIUM

The study presented concerns three rural districts in southern Wallonia (French-speaking region of Belgium). This area has only a few small towns provided with shops and services. It is also a region where widespread quality tourism is developing. However, the use of the bicycle as a mode of transport or even for leisure is currently rare.

Consequently, the study enabled the networks and infrastructures which need be set up in the short and medium term in order to promote a potential demand from cyclists to be specified.

This approach defined two networks:

- A utility network made up of three sub-networks: one local, one inter-village and one regional.
- A tourist network made up of three thematic "cycle paths".

ERSTPLANUNG DES FAHRRADVERKEHRS IN EINEM LÄNDLICHEN GEBIET IN BELGIEN

Die vorgestellte Studie befaßt sich mit drei ländlichen Bezirken im südlichen Wallonien (französischsprachige Region in Belgien). In diesem Gebiet gibt es nur einige wenige Kleinstädte mit Geschäften und Leistungsanbietern. Gleichzeitig entwickelt sich in der Region ein umfangreicher Qualitätstourismus. Der Gebrauch des Fahrrads als Verkehrsmittel und auch das Radfahren als Freizeitbeschäftigung sind gegenwärtig noch eine Seltenheit.

Deshalb wurde im Rahmen der Studie festgestellt, welche Netze und Infrastruktur kurz- und mittelfristig geschaffen werden müßten, um eine potentielle Nachfrage von Seiten der Radfahrer decken zu können.

Im Rahmen dieses Ansatzes wurden zwei unterschiedliche Netze definiert:

- Ein Netz für den täglichen Gebrauch, bestehend aus drei Unternetzen: einem lokalen, einem die Dörfer verbindenden und einem regionalen Netz.
- Ein Fremdenverkehrsnetz aus drei themenspezifischen Radrouten.

IZVIRNO NAČRTOVANJE KOLESARJENJA V PODEŽELSKEM PREDELU BELGIJE

Referat zajema tri podeželska področja na južnem valonskem (francosko govoreči del Belgije). To področje zajema samo nekaj večjih mest s trgovinami in uslužnostnimi dejavnostmi. To je tudi področje, kjer se razvija široko razviti kvalitetni turizem. Vendar pa je uporaba kolesa kot prevoznega sredstva ali celo kot način rekreacije trenutno redkost.

Posledično je študija omogočila povezave in infrastrukturo, ki ju je potrebno vzpostaviti v kratkoročnem in srednjeročnem obdobju, da bi bilo mogoče specificirati potencialne zahteve kolesarjev.

Ta pristop je oblikoval dve omrežji:

- utilitarno mrežo, narejeno iz treh podomrežij: lokalnega, interlokalnega (med vasmi) in regionalnega;
- turistično mrežo, sestavljeno iz treh tematskih "kolesarskih stez"

ORIGINAL BIKE PLANNING IN A RURAL AREA IN BELGIUM

1. GENERAL OUTLINE

1.1 GENERAL DESCRIPTION OF CYCLING POLICY IN BELGIUM

Belgium has been an independent kingdom since 1830 and is today a federal state made up of three political regions (Dutch-speaking Flanders in the north, bilingual Brussels in the centre and Wallonie, mainly francophone with a small German-speaking minority, in the south.) Since 1984 transport policy, in terms of both journey planning and the management of road, motorway, waterway and air transport networks, has been handled at regional level.

The municipality also plays a significant political role in the Belgian system. An institution dating back to the French occupation in the Napoleonic era, municipalities have, however, very limited powers regarding transport policy other than those concerned with planning and managing the local road network. Wallonie, the southern part of Belgium is currently composed of 262 municipalities.

In Belgium there is no real national (federal) programme for the development of more regular cycle use, despite ever-increasing demand from users and certain regional and municipal authorities. However, many plans at municipal (or inter-municipal) level have been in existence for a number of years.

Flanders, the North of the country, has a clear lead in this context. It has a high level of cycle use, a result of flat terrain and a "cycle culture" similar to that in the nearby Netherlands.

Wallonie, in the south, is hillier, but is currently developing many initiatives to encourage both tourist (the RAVel network) and utility (municipal and inter-municipal cycling plans) cycle use. One of the original features of the Walloon initiatives is the development of cycle route networks in rural areas where there is a low population density but an increasing demand for cycle transport.

1.2 GENERAL BACKGROUND TO THE COUVIN - PHILIPPEVILLE - VIROINVAL INTER-MUNICIPALITY CYCLING PLAN

The cycling plan in question concerns a rural area in southern Wallonie, near the border with France. It covers the territory of three municipalities, Couvin, Philippeville and Viroinval, affecting around 40 000 people.

The area studied covers over 480 km² with a very low population density. The region is not highly developed in economic terms and is currently looking for new sources of employment such as tourism and tertiary services. There are only two larger centres (Couvin and Philippeville) where most of the schools, public and private services, businesses, etc. are concentrated.

Against this background, the municipalities involved wanted to study the implementation of a cycle route network for tourist and utility use in order to ease mobility problems (in this area one family in three does not own a motor vehicle) and enhance the value of local tourist facilities. The Region of Wallonie which oversees the municipalities has allocated a grant of 1.8 million Belgian francs (EUR 44 620.83) for studies for this network.

2. THE STUDY

2.1 GENERAL BACKGROUND TO THE STUDY

The study for the network of cycle routes in the municipalities of Couvin, Philippeville and Viroinval was entrusted to Survey & Aménagement scrl of Namur and Brussels (Belgium). It was carried out between February and September 1998 in three phases:

- Stocktaking and diagnosis
- Proposals for networks
- Specification of the infrastructural measures required

The study was carried out in broad collaboration with the three municipalities, the region of Wallonie and the public transport companies.

2.2 MAIN AIMS OF THE STUDY

The main aims of the study were to draw up a network of local, inter-village and regional cycle routes for daily and utility use and to specify the technical measures required to make these routes safe, comfortable and coherent.

Furthermore, at the request of the municipalities, the study was extended to draw up a network of themed tourist cycle routes which would supplement the existing and planned tourist network.

2.3 AN ORIGINAL STUDY: TOWARDS AN ALTERNATIVE VIEW OF THE BICYCLE IN RURAL AREAS

Carrying out a study of supply and demand for cycle facilities is something of a novel idea in Belgium, as it would be in a fair number of other European countries. The bicycle is well known as an alternative means of travel to the car for urban journeys.

When the bicycle is considered in a rural context, however, almost universally it is leisure cycling which is thought of. Beyond that, however, the bicycle offers an interesting alternative for rural utility travel since a significant proportion of the population live close to workplaces and services. Furthermore, the bicycle, in combination with the train or the bus, can form part of a modal chain which offers many advantages in a rural area makes it possible for European rural households to dispense with an otherwise necessary second car. Finally, the bicycle is a very useful means of transport for children in rural areas, reducing accessibility and road safety problems around schools.

The study for the Couvin - Philippeville - Viroinval inter-municipality cycle plan has therefore tried to avoid falling directly for the "rural area - leisure cycling" cliché, and instead to analyse the local demand for utility cycle journeys in order to respond to that real demand. Following on from this - and at the request of the local authorities concerned - leisure cycling aspects were also tackled.

2.4 STAGE 1: ANALYSIS OF THE CURRENT SUPPLY AND DEMAND FOR CYCLE TRAVEL IN THE THREE MUNICIPALITIES

In order to see the scope for the creation of a local network of cycle routes, the study first assessed the existing supply, in terms both of existing infrastructure and of services offered to cyclists.

The result showed little on the positive side, since apart from the Mariembourg - Meuse valley and Oignies - Olloy-sur-Viroin RAVeL tourist routes (see the report by Mr LACROIX, Poster-Session G3) and the cycle paths around the Ry de Rome reservoir at Couvin, there is no effective cycle infrastructure. The number of cycle parking places in the three municipalities stands at only 71, of rather variable quality. Cycle sales, repair and hire provision is very limited in terms of both size and range of services.

The potential demand for cycle travel is considerable.

A survey of staff of the three local authorities enabled this demand to be quantified. It is estimated that 15% of inhabitants might choose to cycle to work regularly (67% work within 5km of their homes!).

Where schools are concerned, 37.5% of children live within 5km of their place of education and could almost all travel to school by bicycle.

Finally, from the point of view of tourism, cycle use is steadily increasing, particularly on the existing RAVeL tourist network.

2.5 A MAJOR PROBLEM IN THE RURAL SITUATION: THE EXPLOSION IN DEMAND

One of the major problems in developing a cycle route network in rural areas (in Europe) is the explosion of the population and services, and thus a significant gap between supply and demand.

It therefore seems illusory to think that cycle infrastructure can be installed everywhere. It is, however, advisable to promote the installation of light infrastructure (including cycle parking) in each village, in order to give a positive "brand image" for regional cycle development. Alongside this local infrastructure, genuine routes need to link the centres of population, employment and services.

2.6. THE NETWORKS

2.6.1 THE UTILITY NETWORK

As far as utility travel is concerned, the combined study of potential supply of the road network and the demand in population terms made it possible to consider the Couvin - Philippeville - Viroinval inter-municipality cycle plan in terms of three types of utility network:

2.6.1.1 THE LOCAL NETWORK

For the reasons noted above it is proposed that a suitable cycle parking installation be located in each village (in a strategic position coordinated with public transport provision) and that safety measures be progressively taken in sensitive areas, particularly those around schools.

The inter-village network

The aim of this network is to connect the major (in terms of either population or services and businesses) built-up areas. The routes were drawn up after being surveyed by bicycle, in order to ensure that the easiest, most direct and most coherent routes were selected.

This network is structured in the form of six complementary routes grouped around the built-up areas of Couvin and Philippeville.

Each route has been selected by setting up an index of practicability, i.e. an index showing whether the route is currently useable; this involved developing specific indices for utility, school or leisure use of the given route and also for individual factors such as road safety, social issues, motor traffic load and terrain. Measures (infrastructure or in some cases education or information) were then specified which could modify these indices and improve the usability of each route

The regional network

If the local and inter-village networks develop correctly, in the long term it might be possible to set up a regional network which would link up with those of other towns in the region and in France.

2.6.2 THE TOURIST NETWORK

At the request of the municipal authorities it was proposed that a local network of themed tourist cycle routes should be set up, complementing the present and planned RAVeL network and the network of mountain bike circuits which are to be opened shortly, also taking into account the possibility that a Eurovelo project European cycle route running from Trondheim (Norway) to Santiago de Compostela (Spain) may pass through the area. These routes would basically be accessible to families and cycle-tourists. They all use existing roads and paths.

This network is to be presented in the form of three cycle routes intended to display the natural and architectural heritage of the area taking as a theme the native materials for which it is still famed.

On the ground, this network should take the form of specific signposting and the installation of stopping areas with information panels. The network generally uses roads with light traffic and, on roads with higher traffic levels, the cycle facilities planned for the utility network.

The proposed routes are:

The "stone" route, showing the digging, the working and the use of local stone in the architecture and public open spaces of Condroz and Fagne (45km).

The "wood" route exploring the theme of the environmental and material wealth of the forest in Thiérache and the Viroin valley (25km).

The "iron" route showing the use of iron in the Eau Noire valley (17.7km)

3. IMPLEMENTATION

The region of Wallonie has just allocated 10 million Belgian francs (EUR 247 893.52) as a supplement to investment by municipal authorities, for the implementation of inter-village cycle routes. The municipalities have chosen to give

priority to three of the routes.

Discussions are currently under way with the Walloon regional Minister for Infrastructure and Transport for the facilities on regional roads, and with the regional tourist board regarding the tourist network.

The first results should see the light of day during 1999.

4. INFORMATION AND CONSCIOUSNESS-RAISING

The municipalities involved have also decided to keep their citizens and tourists informed about these projects.

Thus an exhibition on the cycling plan, launched at a press conference, will be presented in each municipality and made permanently accessible.

Already as part of the cycling plan, between 8 August and 26 September 1998 the town of Couvin organised campaigns of anti-theft marking for cycles in collaboration with the standing crime prevention unit (VSPP) of the Belgian Ministry of the Interior.

On 27 September 1998, on the occasion of its "associations day", the town of Philippeville presented the cycling plan and gave those present a chance to take a trip on board cycle-taxis, brought up from Ghent (Belgium) for the event.

Other events will also be organised in the near future.

5. CONCLUSIONS

The study for the Couvin - Philippeville - Viroinval inter-municipality cycle plan holds twofold interest.

Firstly it shows the development of local (municipal) authority policy for day-to-day cycle use in an area which is not highly suited for cycle travel because of its hilly nature and lack of a traditional cycling culture.

Secondly it shows the scope for developing a network of utility cycle routes in a rural area. This important aspect of day-to-day cycle use has received far too little attention in current studies. Furthermore, the research presented here demonstrates the latent demand by European rural populations for the development of local utility networks.

It remains to be seen how these aspects take concrete form on the ground ...

THE NEW ITALIAN LAW FOR THE DEVELOPMENT OF CYCLING

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ENGLISH

THE NEW ITALIAN LAW FOR THE DEVELOPMENT OF CYCLING

In 1998 the Italian Parliament approved the bill "Guidelines for the Financing of Cycle Mobility", which foresees financial contributions to local public institution to support project in favour of cycle mobility. The idea and the first draft of the bill is FIAB's. Not only cycle paths can be financed, but also cycle parkings, depots, bike rentals, signals, projects of intermodality train/bike, maps, campaigns for bike promotion, educational projects for sustainable mobility.

The financing by the State to the local institutions for a cycle project will be proportional to their allocations for the same project.

This law is very important because it represents a first organic move by the national level to stimulate bicycle projects at the local level.

FIAB has also submitted modifications to the highway code to foster cycle mobility.

DEUTSCH

DAS NEUE ITALIENISCHE GESETZ FÜR DIE ENTWICKLUNG DES FAHRRADVERKEHRS

1998 nahm das italienische Parlament die Gesetzesvorlage „Richtlinien für die Finanzierung der Fahrradmobilität“ an, die finanzielle Unterstützung für lokale öffentliche Institutionen zur Förderung von Projekten zugunsten der Fahrradmobilität vorsieht.

Die Idee und der erste Entwurf für diese Gesetzesvorlage stammten von der FIAB.

Eine Finanzierung kann nicht nur für Radwege gewährt werden, sondern auch für Fahrradabstellplätze, Depots, Fahrradverleihe, Beschilderungen, Projekte für eine Verknüpfung zwischen Fahrrad- und Schienenverkehr, Straßenkarten, Kampagnen zur Förderung des Fahrradverkehrs oder Bildungsprojekte im Hinblick auf nachhaltige Mobilität.

Die Finanzierung, die der Staat lokalen Institutionen für ein Fahrradprojekt gewährt, wird jeweils im Verhältnis zu deren eigenen Ausgaben für das betreffende Projekt stehen.

Dieses Gesetz ist sehr wichtig, da es einen ersten wichtigen Schritt auf nationaler Ebene zur Förderung von Fahrradprojekten auf lokaler Ebene darstellt.

Die FIAB hat außerdem Vorschläge für eine Änderung der Straßenverkehrsordnung zugunsten einer Förderung der Fahrradmobilität.

SLOVENSKO

NOVI ITALIJANSKI ZAKON ZA RAZVOJ KOLESARJENJA

Leta 1998 je italijanski parlament odobril listino Vodila za financiranje kolesarske mobilnosti, ki predvideva finančne prispevke lokalnim institucijam z namenom podpreti projekt za kolesarsko mobilnost.

Zamisel in prvi osnutek listine FIAB-ov. Ne samo, da je možno financirati kolesarske poti, ampak tudi parkirišča za kolesa, depoje, izposajo koles, signalizacijo, projekte za intermodalnost vlak/kolo, zemljevide, dejavnosti za promocijo kolesarjenja, vzgojne projekte za trajno mobilnost.

Financiranje lokalnih institucij s strani države za kolesarske projekte bo proporcionalna glede na njihov prispevek za enak projekt.

Ta zakon je zelo pomemben, ker predstavlja prvi dejanski premik na nacionalni ravni za stimuliranje kolesarskih projektov na lokalni ravni.

FIAB je tudi predložil modifikacije pravil na avtocestah za pospešitev kolesarske mobilnosti.

TUESDAY

THE NEW ITALIAN LAW FOR THE DEVELOPMENT OF CYCLING

It is in the '80s that in Italy for the first time single local bodies (Communes and Provinces) began to approve serious interventions in favour of bicycling by building cycle paths. Indeed some Regions passed their own laws aimed at financing cycle paths. At a national level in 1991 the bill 208 foresaw the allocation of contributions to the communes which carried out cycle paths.

But the strategic choice to consider the bicycle as a means of transport, which could contribute to improve the traffic and the environment has never really been made by the Italian government as such. Likewise tourism by bike has never been seen as a way of travelling which is particularly respectful of the environment. In other words, so far, the Italian government had failed to consider cycle mobility as one of the essential components of a transport or environment policy.

The aim of the new national law No. 366 of 19th October 1998 referred to as »Regulations for the Financing of Cycle Mobility« is that of trying to reverse this negative trend. The idea and the drawing up of the first draft of the bill came from FIAB, the Italian cycle-environmental association, while the legislative initiative was taken up at the Chamber of Deputies by a number of MPs of different parties headed by MP Paolo Galletti, belonging to the Green Party.

What is new in this law is the fact that it does not only take into account cycle paths, but has a wider objective, i.e. the encouragement and the development of cycle mobility in general. First of all it demands the Italian Regions to submit cycling plans each year within longer term programs, on the base of projects presented by the Communes and the Provinces.

At the same time, while approving these annual plans, the Regions must also approve the distribution of the economic resources to the local bodies which have presented a request of funds for cycle mobility.

This distribution of funds is carried out by the Regions using either their own resources or national resources available thanks to the law No. 366. The latter are allocated to the Regions according to two fundamental criteria:

in proportion to the funds allocated by each Region; in other words the higher the resources set apart by the Region, the higher the state contribution.

taking into account the actual sum of money spent by the Region in the preceding year for cycle mobility.

So far the national resources available for the Regions according to the Law No. 366 are rather insignificant: 11 billion Lire each year for 15 years, sufficient to apply for loans amounting to a total sum of 110 billion Lire. On the other hand, the law foresees that in the future the allocations can be increased.

The Law No. 366, as already mentioned, pursues the goal of supporting cycle mobility in general and therefore foresees the financing of a wide range of interventions, such as:

- cycle paths and other infrastructures (as for example underground passages and footbridges) for the safety of cyclists;
- parkings, depots and bike rentals;
- cycling signals;
- projects of intermodality train/bike;
- cycling maps;
- campaigns for bike promotion;
- educational projects for sustainable mobility;
- any other further intervention aimed at developing and protecting cyclists.

Furthermore the law foresees that unused or abandoned railway tracks, as well as the banks of rivers or other waterways be used for the creation of cycle itineraries for practising cycle tourism. The law foresees also that when building new roads (except highways, freeways or big national roads) or when renovating existing ones, adjacent cycle paths should be introduced along them.

Finally the law decrees that a part of the fines collected by the Communes should be destined to the realization of interventions in favour of cycle mobility: Initially according to the law the share should have been at least 20% of the fines, but unfortunately this has been modified and the percentage was taken away.

It is not yet possible to report on the results of this law because the deadlines for its enactment are due in the following days. One thing can be said though. Now at the national level we finally have an organic law supporting the circulation of bicycles. Starting from now there are the legislative conditions for the Ministry of Transport to allocate new economic resources and to coordinate the whole national and local policy of cycle mobility.

FUNDAMENTAL PROBLEMS OF DESIGNING AND REALIZATION OF BICYCLE INFRASTRUCTURE IN POLAND

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This paper presents fundamental technical, social and legislative problems of designing and realization of bicycle infrastructure in Poland. During the '90 - ies bicycle is in vogue as a mode of recreation, and in the small and medium size towns as a transportation mode and alternative mode, too. Local authorities take into consideration a bike as an element of urban and transportation policies and local programs of development of bicycle infrastructure. Changes of attitude to cycling and infrastructure are results of opening of borders and collaboration with Western Europe local authorities, as well as result of transformation of democratisation process. Legal regulations implemented in last years, mentioned above, are facilitation in designing and in running of bikeways.

TUESDAY

ENGLISH FUNDAMENTAL PROBLEMS OF DESIGNING AND REALIZATION OF BICYCLE INFRASTRUCTURE IN POLAND

This paper presents fundamental technical, social and legislative problems of designing and realization of bicycle infrastructure in Poland. During the '90 - ies bicycle is in vogue as a mode of recreation, and in the small and medium size towns as a transportation mode and alternative mode, too. Local authorities take into consideration a bike as an element of urban and transportation policies and local programs of development of bicycle infrastructure. Changes of attitude to cycling and infrastructure are results of opening of borders and collaboration with Western Europe local authorities, as well as result of transformation of democratisation process. Legal regulations implemented in last years,

DEUTSCH GRUNDLEGENDE PROBLEME IN BEZUG AUF DIE PLANUNG UND REALISIERUNG EINER FAHRRADINFRASTRUKTUR IN POLEN

Dieses Referat befaßt sich mit grundlegenden Problemen in Zusammenhang mit technischen und sozialen Aspekten sowie in bezug auf die Gesetzgebung, die im Rahmen der Planung und Realisierung einer Fahrradinfrastruktur in Polen auftreten. In den 90er Jahren erlebten wir in Polen ein massives Umsteigen auf das Fahrrad als Fortbewegungsmittel und als Freizeitgerät. In den 80er Jahren hingegen wurde das Fahrrad noch als Element antisozialistischer Aktivitäten betrachtet, und deshalb wurde auch keine Fahrradinfrastruktur geschaffen. Das Radfahren war allerdings während dieser gesamten Zeitspanne als Freizeitaktivität sehr beliebt. Heute, Ende der 90er Jahre, hat sich die Einstellung zum Fahrrad gewandelt. Radfahren ist als Freizeitbeschäftigung en vogue, und in den kleinen und mittelgroßen Städten ist das Fahrrad darüber hinaus auch als Fortbewegungsmittel und alternatives Verkehrsmittel beliebt. Die Lokalbehörden berücksichtigen das Fahrrad als Element ihrer Stadtplanungs- und Verkehrspolitik und verabschieden lokale Programme

SLOVENSKO GLAVNI PROBLEMI OBLIKOVANJA IN REALIZACIJE KOLESARSKE INFRASTRUKTURE NA POLJSKEM

Članek obravnava glavne tehnične, družbene in pravne probleme pri oblikovanju in realizaciji kolesarske infrastrukture na Poljskem. V 90. letih lahko opazimo velik prehod h kolesu kot sredstvu transporta in rekreacije na Poljskem. V 80. letih je veljalo kolo za element protisocialističnih dejavnosti in se kolesarska infrastruktura ni oblikovala. Ves čas pa je bilo kolo zelo popularen način rekreacije. Ob koncu 90. je odnos do kolesa drugačen. Kolo je postalo moden način rekreacije, istočasno pa v majhnih in srednjevelikih mestih način prevoza in velja za alternativo. Lokalne oblasti sprejemajo kolo kot element urbanističnega in transportnega razvoja in lokalnih programov za razvoj kolesarske infrastrukture. Prepričani so, da naj bi pro-kolesarska usmerjenost prinesla večje število glasov na lokalnih volitvah. Spmembe v odnosu do kolesarjenja in infrastrukture so rezultat odpiranja meja in pogostih stikov in sodelovanja z zahodnoevropskimi lokalnimi oblastmi, kakor tudi rezultat procesa demokratične preobrazbe.

FUNDAMENTAL PROBLEMS OF DESIGNING AND REALIZATION OF BICYCLE INFRASTRUCTURE IN POLAND

1. INTRODUCTION

This paper presents fundamental technical, social and legislative problems of designing and realization of bicycle infrastructure in Poland. During the '90 - ies big changing to bicycle as a transportation and recreational mode in Poland are observed. In '80 - ies bicycle was perceived as an element of antisocialism activities and bicycle infrastructure was not implemented. However bike was all of the time popular in society as recreational mode. Today, in the end of '90 - ies attitude to bicycle has changed. It is in vogue as a mode of recreation, and in the small and medium size towns as a transportation mode and alternative mode, too. Local authorities take into consideration a bike as an element of urban and transportation policies and local programs of development of bicycle infrastructure. In their opinions pro-bike policy should bring voices in locals elections. Changes of attitude to cycling and infrastructure are results of opening of borders and frequent contacts and collaboration with Western Europe local authorities, as well as result of transformation of democratisation process.

2. ROLE AND RANGE OF BICYCLE UTILIZATION IN POLISH TOWNS

Role and range of bicycle utilisation in Polish towns depend from size of town. In medium size towns t.e. 15000 to 150000 inhabitants, constitute the most numerous group of Polish towns. The spatial layout of these towns and resulting average travel distances /ca. 2 - 2,5km/ facilitate the board utilization of bicycles. The usual layout is radial with a ring road and it creates a possibility to move on the shortest distances. Most Polish towns have historical urban and spatial layout suited to transport difficulties. Because the bicycle requires little space, whether in use or parked, and because it is not harmful to the environment, it should be utilized more and more in urban traffic.

In Poland, a bicycle is the most common household means of transport. According to the author's estimates the number of bicycles per 1000 inhab. is ca. 300 [3], and moped constitute only 5% of this number. Nearby 50% of volume of bikes are moderns, equipped with minimum 10 gears and 26 inches of wheel. They are foreign products or assambled in Poland. Cost of medium quality model of mountain bike is on the level of one medium month salary in industry, that is too high for many peoples. Big changes are in level motorization, too. Coefficient of individual motorization was grew from 112 car/ 1000 inhab. in 1990 to 230 car/1000 inhab. in 1998 [3].

The lack of physical protection against collisions discourages bicycle usage, especially as a far as collisions with cars are concerned. Cyclists more often than drivers do not obey traffic regulations, and they are differently less experienced in traffic than drivers. But drivers doesn't respect laws of cyclists, too. Streets are very dangerous, because the speed is high and exceed 60km/h - limit in urban areas. Drivers frequently use the sidewalks as a place to parking and blocked flow of bicycles and pedestrian flow. Must be noted, that in Poland parking cars in the sidewalks are authorized! The data on traffic safety show that in recent years there have been about 4000 accidents involving cyclists annually, and that about 800 people have been killed in the accidents and about 5800 have been injured. These numbers constitute ca. 11% of the total number of accidents involving causalities [1].

There are high level of menace of theft of bikes and high menace of personals security of cyclists. In spite of rigorous penalties, bicycles are theft from parking and closed buildings. Without of principles streets' cyclists are attacked by hooligans and bicycles are deprived owners.

Ring roads for transit traffic, in which heavy vehicles participate in great numbers have been built in only a few towns. Consequently streams of transit traffic flow through towns. Riding a bicycle in heavy traffic is not pleasant because a cyclist has to breathe in car exhaust fumes.

The development of and numerous improvements in public transport negatively influence bicycle utilization for in-town trips. They also result in the limitation for in town trips. They also result in the limitation of bicycle transport by co. 0,25 trips by inhabitant per day [4]. In Poland, most towns inhabited by more than 20000 people have in-town bus transport. Bike-and-ride systems are utilized in Poland only in satellite towns and villages located in the vivify of big conurbations. Bicycles are used there to get to suburban train stations.

The number of bicycle networks and their length in Polish towns and agglomerations are very low, but last years are enlarged about 150 - 200 km. These are either separate paths, pedestrians - bikers mixed itineraries, bike lanes along streets or so-called bicycle streets.

National transportation policy is very passive and considers the bicycle as minor means of transportation. Bicycle traffic constitutes an element of transportation policy only in a few towns where bicycle paths exist or where a strong pro-ecological aura prevails. Promotional actions are infrequent and only from time to time results in the increase in bicycle. Changes of mentalities of decidents in many cases axe very slowly. In many cases

changes in attitude to bicycle infrastructure problem are visible. To this time still many local authorities and many traffic managers doesn't feel necessity of improvement of bike conditions in urban traffic or thinking that it's any important question and very simple to realisation. When municipalities budgets are poor. Local Authorities Boards are problem of selection of new investments. They choose investments most indispensable. In this reason plans of realisations are moved in next years. This situation isn't accepted by pro-bike lobby groups, generally by ecological organizations. They are very active a exactly in big towns and agglomerations. They organise many bicycle demonstrations and happenings, but their requirements are implemented in live very slowly.

Polish traffic law include a option of bicycle licence that is available to the childrens oldest than 9 years. From 1998, tests of traffic code knowledge are realized in the primary school.

Whether there is a tradition of using bicycles /a very important element of treating a bicycle as a mean of transportation in Polish towns. I or not depends on region. Towns located in the south and west of the country are in the lead. Also, towns which have bicycle path share this tradition. The significant role of the "Bicycle Peace Race" and "Tour de Pologne" has for many years aroused interest, especially among young people. As official surveys show, riding a bicycle was the most popular form of active recreation /next to working in a garden for pleasure, and taking long walks/. Generally can be stated that utilisation of the bicycle in Polish towns are varied and fluctuates from 0.04 to 0.42 trip/inhab./day. It is equivalent the share of bicycle trips from a few to several per cent.

A bicycle in Polish climatic conditions is a seasonal means of transport. The distribution of temperature during a year results in the maximum utilisation of bicycle in the period between May and September. The month of considerable growth of bicycle usage is April and the decline occurs in October take place.

3. FUNDAMENTAL TECHNICAL, SOCIAL AND LEGAL PROBLEMS OF DESIGNING AND REALIZATION OF BICYCLE INFRASTRUCTURE IN POLAND

Fundamental technical, social and legal problems of designing and realization of bicycle infrastructure in Poland in the end of 90'-ies are multiples and in majority reciprocally conditioned.

In author's opinion following problems in designing and realisation of bicycle infrastructure should be mentioned as essential:

1. Lack of experience concerning effectiveness of different types of bikeways in different road -traffic and land conditions, lack of audit existing infrastructure. Accessible results of investigation are scarce. Generally managers of traffic in towns are not interested in functioning of existing bikeways.
2. Lack of actual recommendation on planning and designing of bikeways systems; Its a result majority of designers use the foreign documents but take into consideration polish traffic law. This situation causes the differentiation of solutions realized and to the false designing. In the questions of geometrical parameters, generally two-way bikepath is designed 2,5 m width, one-way bikepath - 1,5 m. Bike lane are implemented very seldom. Typical width is 1,5 m. According to existing legal regulation [xx] contra flow bike lane in one-way street could be applied when total width of carriageway is minimum 8,0m. Horizontal and vertical signs meet in Poland are typical for many european countries.
3. In 1998, Traffic Law in Poland [2] was novelised. Some of new regulations concern a traffic bike and bikeways. I want to note into two general questions:
 - a/ from definition of "bicycle" moped was excluded,
 - b/ on the road with priority, when bikepath or bike lane are crossing an intersection have the same law to priority as a vehicle situated in carriageway.
 Above regulations improve level of and simplify horizontal signs along a bikeway at intersections. In this way Polish law approaches to traffic law in majority of European Union Countries.
4. From 1994, in new legal documents concerning Urban and Country Planning, e.g. in Local Plan of Land Using and in Study of Conditions and Development of Land Using appropriate regulations are included. All these documents have to contain solutions of bicycle infrastructure. But unfortunately ranges and a forms of solutions to bikeways systems aren't described in these studies.
5. In Poland bike path is considered as a building construction and therefore have to pass the same procedure as a new building construction. Long procedure of co-ordination and slow decisions of responsible peoples in the Traffic Management Department in Regional Authorities or Municipals Local Authorities and Police make that co-ordination process takes very long time:
 - a/ receiving of order to bikeways project require adjudication by tender procedure, that can go on even few months, according of its conditions and presentation dossier with many legal and professional experience document;

b/ technical project must receive:

- decision about Conditions of Construction and land using prepared on request of designer; - positive opinion in National Police Authority at Voivodeship,
- positive agreement in Traffic Management Departments at different levels, concerning the question which streets in particular administration levels bikeways will lead,
- positive adjustment of Team of Co-ordination of Technical Documentation /actually from 01.01.1999 at District Level/, where project is evaluated by different experts in Engineering and Urban Planning and project is drawn in archive map of land use;
- at the end of this long process designer can apply for construction permission in District Authority in Supervision Construction Department.

c/ when bikeways cross a long of section dependent in different level of Traffic Management Authority /National Roads, Voivodeship Roads, District Roads, and Communal Roads/ confirmation of Traffic Organisation in all administration level is required.

d/ technical project can be executed by people /engineers or technicians/ with Official Qualification in Civil Engineering Design. This procedure takes minimum a few months /6 months/. It should be noted that projects of bikeways should be prepared in actual topographical maps.

6. Medium prices of construction a new bicycle infrastructure are rather high. Medium costs of 1 km of bike roads in the official price at IV quarter of 1998 are following: - bikepath /new construction/ -111 000 USD,
- bikepath /only horizontal painting and vertical signs/ - 3 435 USD, - bike lane in the street- 1 900 USD,
 - bike street /traffic calming/ 2 000 USD.

Generally when bikepath is leading close to sidewalk, in the same corridor, a new pavement should be planned to sidewalk as well, because quality of majority of existing sidewalks are very bad. It means that costs of construction of bikepath can be decidedly higher.

7. Implementation of bikeways in existing land using requires very frequent modernization of traffic lights at intersections. In Warsaw, where near by 30 km of new bikeways was constructed only in one itinerary traffic light were adopted. It's a result of slow action of Traffic Management Administration.
8. During 90'ies approachable growth of building materials was observed, including of pavement's materials. There are not technical limits in scope of quality, type and colour of selected pavement. The price of pavement and local conditions /architecture and spatial composition/ decide which type of pavement will be applied.
9. Decreasing of costs of improving conditions of bicycles traffic in certain situations, is possible by designing and realization bicycle street as a part of traffic calming zones or in itinerary as a tempo 30 or inhabitants zones (20km/h). In this type of solution is equipping of this itineraries with directional signs for bikes is very important. This is also necessities in other types of bicycle infrastructure. Unfortunately in traffic official national documents this type of equipment of bikeways is not included. Tests with implementations of directional bicycle signs with using of official horizontal signs are having precedential character or only exist on the basis of publicity regulations. Author's proposition implementation this solution in this question presented to bicycle system in one zone in Warsaw in opinion of Warsaw Municipal Road Authorities require acceptance of Traffic Administration Department of Transportation Ministry.

4. CONCLUSIONS

The role and range of bicycle utilisation differs in Polish towns. In towns without public transport, the bicycle constitutes, next to pedestrian traffic a basic means of individual transport. In other towns the bicycle is a complementary means of transport, or constitutes an alternative to a walk or trip on a crowded bus on a distance up to 5 km.

Changes of attitude to cycling and infrastructure are results of opening of borders and frequents contacts and collaboration with Western Europe local authorities, as well as result of transformation democratisation process. Legal regulations implemented in last years, mentioned above, are facilitation in designing and in running of bikeways. There are very positive regulations. In this way Polish law is approaching traffic law of majority of European Union Countries.

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DEVELOPMENT OF CYCLE TRANSPORT IN SLOVAKIA

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TUESDAY

ENGLISH

DEVELOPMENT OF CYCLE TRANSPORT IN SLOVAKIA

The content of the paper will be first of all the information on the present situation in cycling transport in the SR and its evaluation.

Development of cycling transport in the SR is in the stage of increasing interest in this mode of transport and it has been successively developed in all the spheres of application.

The conceptions of economic and social development of the SR regions elaborated and approved by the SR Government contain the sphere of transport covering the problems of cycling transport too.

The characteristic of trip purposes of the inhabitants can be divided according to the used transport means too. The use of bicycles for different trip purposes in Slovak conditions becomes an important transport mode for some inhabitants. The bicycles are used mainly during leisure time, i.e. for recreational trips.

There is a group of inhabitants using the bicycle at regularly repeated trips, i.e. to work.

The paper will deal with the motivation of bicycle use, characteristic of positive and negative impacts of cycling transport upon the neighborhood.

When using the cycling transport it is necessary to take into account the territorial characteristics, i.e. to create conditions for development of cycling transport within the framework of international cycling connections, internal long distance, regional and urban trips made by bicycles.

The cycling road and its equipment must ensure safe and comfortable motion of cyclists without danger of the other participants.

In the conclusion the paper describes the recommendations for more intense use of cycling transport in Slovakia.

DEUTSCH

ENTWICKLUNG DES FAHRRADVERKEHRS IN DER SLOWAKEI

Dieses Referat bietet zunächst Informationen über die gegenwärtige Situation des Fahrradverkehrs in der Slowakei und nimmt eine Evaluierung desselben vor.

Die Entwicklung des Fahrradverkehrs in der Slowakei befindet sich momentan in der Phase, in der dem Fahrrad als Fortbewegungsmittel vermehrt Aufmerksamkeit geschenkt wird. Eine sukzessive Entwicklung war in allen Anwendungsbereichen zu verzeichnen.

Die Wirtschafts- und Sozialentwicklungskonzepte für die slowakischen Regionen, die von der slowakischen Regierung entwickelt und verabschiedet wurden, beziehen sich unter anderem auf den Bereich des Verkehrswesens, und in diesen wiederum fallen auch die Probleme des Fahrradverkehrs.

Die typischen Fahrtzwecke der Einwohner lassen sich unter anderem nach dem benutzten Verkehrsmittel einteilen. Das Fahrrad wird für bestimmte Fahrtzwecke unter slowakischen Bedingungen für manche Einwohner zu einem wichtigen Verkehrsmittel. Das Fahrrad wird hauptsächlich während der Freizeit, d.h. für Erholungsausflüge, genutzt.

Es gibt aber auch eine Gruppe von Einwohnern, die das Fahrrad für regelmäßige Fahrten nutzt, d.h. für die Fahrt zur Arbeit.

Das Referat beschäftigt sich mit der Motivation für den Gebrauch des Fahrrads sowie mit den positiven und negativen Auswirkungen des Fahrradverkehrs auf die lokale Umgebung.

Wenn man das Fahrrad als Verkehrsmittel nutzt, müssen die landschaftlichen Gegebenheiten berücksichtigt werden, d.h. es müssen Bedingungen für die Entwicklung des Fahrradverkehrs in Form von internationalen Fahrradverbindungen, nationalen Radwanderwegen sowie regionalen und städtischen Fahrradstrecken geschaffen werden.

Der Radweg und seine Ausstattung müssen eine sichere und bequeme Fortbewegung des Radfahrers ohne Gefährdung durch die anderen Verkehrsteilnehmer sicherstellen.

In den Schlußfolgerungen gibt das Referat Empfehlungen für eine intensivere Nutzung des Fahrradverkehrs in der Slowakei.

RAZVOJ KOLESARSKEGA PREVOZA NA SLOVAŠKEM

Referat bo najprej predstavil trenutno situacijo kolesarskega prevoza v Slovaški republiki. Razvoj kolesarjenja na Slovaškem je na nivoju velikega zanimanja za to vrsto prevoza na vseh področjih. Koncepti ekonomskega in socialnega razvoja v slovaških regijah, ki jih je razvila in potrdila slovaška vlada, vsebujejo tudi področje transporta, ki pokriva probleme kolesarskega prevoza.

Značilna potovanja prebivalcev je mogoče razdeliti glede na uporabljena prevozna sredstva. Uporaba koles za različne namene postaja na Slovaškem pomemben način prevoza za nekatere. Večinoma uporabljajo kolo v času rekreacije (rekreativni izleti).

Nekateri uporabljajo kolo za redno ponavljajoče se vožnje (v službo).

Referat bo predstavil motivacijo za uporabo koles ter značilne pozitivne in negativne vplive prevoza s kolesom na okolico. Pri uporabi kolesa kot prevoznega sredstva je potrebno upoštevati teritorialne značilnosti, to je ustvariti pogoje za razvoj kolesarskega prevoza v okviru mednarodnih kolesarskih povezav, daljše interne, regionalne in urbane izlete s kolesi.

Kolesarske poti in njihova opremljenost morajo zagotavljati varno in udobno gibanje brez ogrožanja drugih udeležencev. V zaključku je podan opis priporočil za bolj intenzivno uporabo kolesarskega prevoza na Slovaškem.

DEVELOPMENT OF CYCLE TRANSPORT IN SLOVAKIA

RESUME

The paper will deal with the present state of cycle transport in Slovakia. The cycle transport will be evaluated from several aspects: from the territorial and planning projects of cycle paths, the legislative and operational conditions, the importance of cycle transport within the modal split, the purposes of cycle paths and the next development plans in cycling in the towns and recreational regions and within the frontier trade with the neighbouring countries and connected problems.

INTRODUCTION

Problems connected with cycle transport are similar in whole the Europe. Dangerous conditions on the roads as well as ignoring of cyclists by other participants of traffic is the greatest obstacle. Though with regard to further development of motor transport in towns, towards which the majority of inhabitants have very critical opinion, it follows that cycle transport will play more important role in everyday life than now. In Slovakia already before several years the boom of cycle transport came into being. The inhabitants began to use the bicycles more frequently. However, the bodies responsible for technical infrastructure of cycle transport did not respond suitably to this change.

ASPECTS OF DEVELOPMENT

The need of inhabitants to transfer themselves belongs to their basic needs. The inhabitants choose for their purpose of trip the most suitable mode of mobility from the offer of passenger transport. The selection of transport means affects many factors and result of this selection is the modal split in passenger transport.

With regard to the public passenger transport the offer of passenger transport in the Slovak Republic has a good standard with regard to its offer of services of railway and bus transport. The most expanded mode of public mass passenger transport is the bus transport carrying till 53% of the total number of passengers. Regular bus transport is provided on cca 2560 lines, 75% of which has the character of intraregional lines and MHD (public urban transport) lines, 10% of bus lines cross through the territory of several regions and 15% of the lines are long distance lines. Each of 2858 villages in Slovakia is connected with the network of regular bus transport. In 41 towns the State enterprises SAD (Slovak Bus Transport) provide the public urban transport too. In 5 towns the road transport is provided by private transport enterprises. The other modes of public passenger transport as air and water transport are used in a small extent. Very important competition for public transport is the individual transport. The individual transport covers the cycle transport, too. Cycle transport is an integral part of modal split, not only in individual transport but also in all the passenger transport. The share of cycle transport in the whole modal split is not monitored it can be determined on the basis of surveys. According to the survey that was a part of the research project "Development of Individual Motoring in the SR to 2020", the share of trips to work by bicycle is cca 7%.

The State creates the conditions for development of cycle transport only in the spheres of legislation and standardization where the basic conditions of using of bicycles, designing of roads for cyclists etc. are specified. Basically the conception of development of cycle transport in the SR is missing. The principles of State transport policy in force do not mention specially the cycle transport. The authorities of state and local administration deal with the cycle transport to larger extent. But there are missing the supporting materials for development of cycle transport on this level. There is a material "The Directives of Transport Policy of the SR Capital Bratislava to 2010", which deals with the support of development of non-motorized transport in the territory of the town and in its neighborhood in connection with the international network of cycle tracks. In the other towns there are not processed the detailed general plans of cycle transport. Cycle transport is mostly discussed by various spare-time corporations and associations, which in addition to the meetings of the friends of cycle transport organize the meetings for support and advertising of this mode of individual transport, too. Realized transport surveys, which were not specialized in cycle transport, showed that in Slovakia almost each household owns a bicycle. It can be said that bicycle is a means of transport used for various purposes of trips, mostly on distance to 5 km. Almost 60% of all purposes of trips in urban transport are for shorter distance than 5 km. In Slovakia this distance is confirmed by some surveys. Possibilities of the use of cycle transport are the greatest just to this distance. In spite of this fact the car is used for these short distances, too. The Government transport policy must concentrate on the increased stimulation of the development of cycle transport mainly on these short distances.

In principle it is possible to divide the cycle transport according to its purpose and place. Basically it deals with the use of cycling transport in the towns and their agglomerations, rural settlements and recreational trips. The purpose of the trip can be various but basically it is possible to speak about the trips regularly repeated and about the trips at leisure. Trips regular by purpose are the trips to work and to school. The other purposes of the trips can be included to the group of trips not repeated daily and performed mainly irregularly at leisure. Extended way of making use of cycle transport is just at leisure, i.e. recreational trips in neighborhood of towns, in valleys and along the rivers. These holiday trips are often realized across the frontier of Slovakia. As an example it is possible to mention the known European cycle tracks along the Danube leading from Passau through Vienna to Bratislava and Šturovo and farther to Hungary.

By regular trips the cycle transport can properly cooperate with public transport through using of the "bike & ride" system. The people having a big distance to the station of bus or other public transport could use the bicycle. Similarly within the individual transport the bicycle can substitute a private car for some purposes of transfer. Willingness of the inhabitants to make use of bicycle for some definite purposes of transfer depends on considering of advantages and disadvantages, too.

The advantages of cycle transport are the following:

1. Bicycle is an advantageous means of transport, especially for short distances.
2. Bicycle is very proper means of transport for the trips to and from the stations of public transport.
3. Construction or adaptation of infrastructure for cyclists is relatively cheap.
4. Cycle transport does not pollute the air, does not cause the noise and does not divide the country.
5. Bicycle takes small area by driving or parking.
6. Bicycle is an acceptable means of transport for all social groups.
7. Cyclists are not limited by congestion and they can rely on exact fare times.
8. The ride on bicycle is healthy and bicycle is a cheap means of transport.
9. Cycle transport is an individual means of transport with all the advantages following from this fact - intimacy, trip from door to door etc.

The disadvantages of cycling transport are the following:

1. Cyclist can be a relatively easy victim of transport accident. In 1996 there were 990 transport accidents caused by the cyclists, i.e. 1,3% of all accidents, by which 36 persons were killed, that is cca 6% of the total number of killed persons in the SR, and 852 persons were injured, that is 7,3% of the total number of persons injured by transport accidents.
2. In many cases the problem is the social safety of cycle tracks. It can be caused by insufficient lighting, lack of residential areas etc.
3. Quality of cycle tracks isn't sufficient. There are the problems in connection, comfort, on crossroads or in the necessity to by-pass some regions etc.
4. There is a lack of proper objects for placing of bicycles that increases the danger of theft.
5. There is a lack of infrastructure for combination of the bicycle with public transport.
6. Cyclists are dependent on the weather.

The State as well as the local administration bodies and of course also the inhabitants of the towns and villages must participate in the increase of signification of cycle transport. The State can support the cycle transport thereby that the users of cars will pay a real price represented by automobile transport. Revision of the tax system, formation of funds, investments into infrastructure and actual determination of losses and damages save more fuel, areas and clean air. At the same time it will not be a severe suppression of motoring but the best cooperation.

The municipal bodies can most efficiently enforce the development of the infrastructure and planning of the development of cycle transport. Preparation of general plans of cycle transport in cities with 30 000 inhabitants and more would assist in the increase of interest in cycle transport. Extension of cycle transport in this category of towns would properly affect the modal split in public and individual transport. In these towns the network of cycle tracks in length ca. 15 km would be satisfactory. Cycle tracks should be built along the main roads in the built-up areas as well as in open country and they should be included to the planning of road infrastructure by construction, maintenance and repairs. It is justifiable to cover the cost for cycling infrastructure from the road tax and fuel tax.

Formation of the area for development of cycling transport in Slovakia consists in materialization of the principles of transport policy, better elaboration and specification of aims decisive for the increase of making use of cycle transport.

AIMS OF TRANSPORT POLICY:

With regard to cycle transport and whole transport policy it would be appropriate to:

1. Determine the realistic strategy for limitation of trips by the cars and increase of the share of walking and cycle transport.
2. Support the programs extending the use of other means of transport. If the man never tried cycling he does not take the bicycle as suitable means of transport.
3. Support the development of such designs of roads and equipment, which limit the possibility of critical situations leading to accidents and injuries of cyclists. Main barrier of cycle transport is mostly the speed and volume of transport, access of drivers to the cyclists, lack of cycling infrastructure or its inconvenient maintenance.
4. Create the cycling network in towns and outside them. Cycling infrastructure makes cycle transport safe and proper, because separated roads, cycle paths or other possibilities cause increased use of bicycles by the inhabitants. The roads fulfilling high requirements for cycling ought to have the priority. The cycling network in the region is important too.
5. Create the fund as certain percentage, which will serve for non-motor, energy-saving and environment friendly mode of transport and to observe so that every project of the road must refer to the cycle transport too. If the share of cycle transport in the modal split reached ca. 2%, the volume of financial means should be the same 1%-2%.
6. Support the "bike & ride" system by construction of approach roads to the stations of public transport and by construction of lay-by; to limit the individual automobile transport so that every transport mode has in the transport corridor the space corresponding to the required share in the modal split. Bicycle is the fastest means of transport for short distances in the town. Appropriate cycling infrastructure supports the advantageous combination of bicycle and public transport for longer trips. Transport solutions prefer mostly the automobile transport that is convenient neither for saving of the space nor for reduction of the pollution. The other users of the roads - cyclists and walkers - are in the second place. Many wide roads have suitable 2 lanes. The space ought to be redivided for public transport, cyclists and walkers. It would create more balanced system working for the whole day better than in case of the roads reserved for automobile transport only for two daily peaks.
7. Compensate the parking in some streets by the lanes for public transport, cyclists or walkers.
8. Support development of "green roads" in residential areas where the walkers and cyclists have the priority and the speed of transport is limited according to the speed of cyclists. The best solution is to put the question to oneself: "Am I feeling that my child can drive to school on bicycle safely?" The problem of difference between the speed of automobile transport, foot and cycle transport confirm the drivers in a conviction that they have the priority. But the streets in residential areas are for

people and not for cars. These areas should be planned not as the areas for dominating role of the cars but as the network area used by walkers, cyclists and motor transport.

Good planning design will change these streets to comfortable areas better than barriers. Very significant difference between road and pavement is not necessary because trees, bushes, flower beds and lighting together with other street objects define the area and confirm the motorists that they have no priority.

9. Support closing of some streets on Sundays for provision of safer conditions for holiday.

10. Introduce the system of charging of the motorists who want to drive to the centre and to use these charges for economical transport modes. The demand of paying for a permission of entry to the centre of the town discourages many motorists from unnecessary trip by a car and develops alternative modes of transport. The charge should be at least by 50% higher than month subscription for ticket in public transport. Payment for permission in connection with congestion and priorities for walking and cycle transport creates the balance in the transport system for all the participants.

CONCLUSION

For increased development of cycle transport in Slovakia it is necessary to realize that it does not deal only with the cycle transport but it is necessary to solve the problem in total in wide continuity in connection with other modes of passenger transport. The State should lay down the basic conditions of development and through the Ministry of Transport, Post and Telecommunication to initialize the elaboration of concept of development of cycle transport in Slovakia. This material would be then some kind of regulation for bodies of local public administration in decision-making referring to higher quality of passenger transport in towns and their regions.

Development of cycle transport needs an extensive support. It is necessary to look for this support at the ministries, local administration as well as by individuals. It can be said that in the next 4 years the support of cycle transport will be better because the contemporary prime minister is a great friend of cycle transport.

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PROMOTING CYCLING IN NORTHERN IRELAND

Cycle use in Northern Ireland has historically been low. With publication in October 1995 of "Transportation in Northern Ireland - The Way Forward", an increased emphasis was placed on all sustainable travel modes. In 1995 Sustrans, the civil engineering charity, was awarded a grant from the Millennium Commission to develop the National Cycle Network. Implementation will involve a large number of interests, with resources being provided by many organisations. Roads Service, the public road authority, has co-operated in developing the Northern Ireland part of this network. This will extend to some 450 km of route, comprising both segregated cycle way and lightly trafficked road. A grant of 2.526 Mecu (£1.8 million) has been received from the European Union Special Support Programme for Peace & Reconciliation. This programme promotes cross-border reconciliation. It also seeks to exploit new opportunities for increased cross-border development and to remedy deficiencies in infrastructure links to allow resumption of cross-border communications. Due to the overall scale of the project (estimated to cost in excess of 14.3 Mecu (£10 million)), Government accounting procedures required that an investment appraisal be undertaken. This demonstrated net benefits of 127 Mecu (£89 million) over 30 years, arising mainly from day trips and tourist cycling. Thirteen kilometres of off-road cycle way and 370 km of additional cross-border signed on-road route have been opened to date. Roads Service is keen to promote cycling as a transportation mode. Urban cycle networks connecting to the National Network are being planned for the main centres of population. A multi-discipline Cycling Forum has been established to formulate a comprehensive strategic approach to cycle development and to involve the widest possible range of interests. By co-ordination of effort, setting challenging targets and following good design practice it is confidently expected that cycle usage will increase appreciably in Northern Ireland.

FÖRDERUNG DES RADFAHRENS IN NORDIRLAND

Der Gebrauch des Fahrrads in Nordirland war immer schon spärlich. Mit der Veröffentlichung des Dokuments „Transportation in Northern Ireland - The Way Forward“ im Oktober 1995 wurde verstärkt Augenmerk auf alle nachhaltigen Verkehrsmittel gelegt. 1995 wurde der im Tiefbaubereich tätigen gemeinnützigen Organisation Sustrans für die Entwicklung des nationalen Radwegenetzes eine Zuwendung der Millennium Commission zugesprochen. Die Umsetzung dieses Projekts wird verschiedenste Interessen betreffen, wobei Ressourcen von vielen verschiedenen Organisationen zur Verfügung gestellt werden. Die Straßenverkehrsbehörde Roads Service hat an der Entwicklung jenes Teils des Netzes, der sich in Nordirland befinden wird, mitgearbeitet. Dabei handelt es sich um eine Gesamtstrecke von etwa 450 km, die sich sowohl aus separaten Radwegen als auch aus wenig befahrenen Straßenstrecken zusammensetzt. Vom Sonderprogramm zur Förderung von Frieden und Versöhnung der EU wurde eine Förderung in der Höhe von 2,526 Millionen ECU (1,8 Millionen Pfund) gewährt. Dieses Programm fördert die grenzüberschreitende Versöhnung. Darüber hinaus konzentriert es sich auf die Nutzung neuer Möglichkeiten für verstärkte grenzüberschreitende Entwicklung und die Beseitigung von Mängeln an verbindender Infrastruktur, um eine Wiederaufnahme der grenzüberschreitenden Kommunikation zu ermöglichen. Aufgrund des Gesamtumfangs des Projekts (dessen Kosten auf mehr als 14,3 Millionen Ecu (10 Millionen Pfund) geschätzt werden), erforderten die Rechnungslegungsvorschriften der Regierung eine Investitionsbeurteilung. Diese ergab einen Nettonutzen in der Höhe von 127 Millionen ECU (89 Millionen Pfund) über einen Zeitraum von 30 Jahren, der sich hauptsächlich aus Tagesfahrten und dem Fahrradtourismus ergeben wird. Bisher

wurden dreizehn Kilometer separater Radwege und 370 km zusätzlicher grenzüberschreitender beschilter Straßenstrecken eröffnet. Der Roads Service ist bestrebt, den Gebrauch des Fahrrads als Verkehrsmittel zu fördern. Für die Hauptballungszentren sind städtische Radwegenetze mit Anschluß an das nationale Netz geplant. Ein multidisziplinäres Fahrradforum wurde eingerichtet, um einen umfassenden strategischen Ansatz für die Entwicklung des Fahrradverkehrs zu formulieren und sicherzustellen, daß der größtmöglichen Vielfalt unterschiedlicher Interessen Rechnung getragen wird. Eine Koordination der Anstrengungen, die Formulierung ehrgeiziger Zielsetzungen und die Verfolgung einer „Good Practice“-Strategie im Bereich der Planung berechtigen zur Hoffnung, daß der Gebrauch des Fahrrads in Nordirland signifikant zunehmen wird.

PROMOVIRANJE KOLESARJENJA NA SEVERNEM IRSKEM

Zgodovinsko gledano je uporaba koles na Severnem Irskem majhna. Ko je leta 1995 izšel "Transport na Severnem Irskem - pot naprej", se je povečal poudarek na vseh trajnih prevoznih načinih. Leta 1995 je Sustrans - inženirska dobrodelna družba - dobila dovoljenje s strani Millenium Comission za razvoj nacionalne kolesarske mreže. Implementacija bo zajemala veliko število deležev, ki jih bodo podpirale mnoge organizacije. Cestna služba, ki odloča o javnih cestah, je sodelovala pri razvoju severnoirskega dela tega omrežja. To bo pomenilo kakšnih 450 km poti, sestavljenih iz ločenih kolesarskih stez in redkoprometnih poti. Subvencija v višini 2.526 mil. ekujev (L 1.8 mil.) je prišla s strani specialnega programa podpore za mir in umiritev v okviru EU. Ta program promovira meddržavno pomiritev. Trude se še razviti nove priložnosti za povečanje meddržavnega razvoja in odpravo pomanjlkjivosti v infrastrukturnih povezavah in s tem omogočiti obnovitev meddržavnega komuniciranja. Z ozirom na celoten obseg projekta (predvideni stroški presegajo 14.3 Mecu; L 10 mil.), so zahtevali računovodski postopki vlade, da se izvede ocenitev investicije. Ta je prikazala prednosti mreže za 127 Mecu (L 89) v 30 letih, pretežno iz vsakodnevnih voženj in turističnega kolesarjenja. 13 km izvencestnih kolesarskih poti in 370 km dodatnih meddržavnihoznačenih cestnih poti je bilo odprtih doslej. Cestna služba je voljna promovirati kolesarjenje kot način prevoza. V načrtu so kolesarske mreže v glavnih centrih urbane naselitve in povezujejo z nacionalno mrežo. Za oblikovanje dodelanega strateškega razvoja kolesarstva je bil ustanovljen multidisciplinarni kolesarski forum, ki naj bi tudi zajel najrazličnejše interese. Tako lahko z gotovostjo pričakujemo, da se bo uporaba kolesa na Severnem Irskem z združenimi napori, zastavljenimi izzivi in z izvrševanjem dobro oblikovane prakse povečala.

PROMOTING CYCLING IN NORTHERN IRELAND

NORTHERN IRELAND - BACKGROUND:

Northern Ireland (NI) has a population of 1.68 million, comprising about 3% of the total population of the United Kingdom (UK). At 25%, the proportion of young people below 16 years is greater than other parts of the UK. While about half of the population resides within some 20 km of the capital city, Belfast, the remainder live in small provincial towns and throughout the largely rural countryside. The province is served by a network of about 24.5 thousand kilometres of public road, a large proportion of which is lightly trafficked.

Due to its rural character, NI relies more heavily on the private car as a means of travel than does the rest of the UK. In 1997, 79% of the work force travelled by car compared with 71% in the UK. A mere 1.2% cycled to work compared with 3.5% in the UK. Car ownership in 1997 was 46.5% of those over 16 years and 70% of households owned a car. From 1986 to 1996 the number of registered motor vehicles rose by 36%.

The death rate from coronary heart disease in NI is amongst the highest in the world. A sedentary lifestyle is an independent risk factor in coronary heart disease. A health and activity survey in 1994 showed that 29% of the adult population would have experienced difficulty in climbing stairs without some assistance or would only be capable of doing so unaided at a very slow pace.

Recent surveys have shown that:

- 25% of adults have access to a bicycle;
- 20% of adults cycle primarily for pleasure, with 2% cycling to work, school or college;
- half of journeys by bicycle are less than 4 miles;
- 10% of adults cycle at least once a week; and
- 1 in 3 households have at least one adult that owns a bicycle.

The latitude of NI is broadly the same as that of Denmark, annual rainfall at 84.6 cm per year is about the same as in Switzerland and, while parts are hilly, it is no more so than many other countries in Europe where the level of utility cycling is considerably higher. There is clearly, therefore, considerable scope to increase use of the bicycle, with attendant benefits to the economy through improved public health, reduced traffic congestion and reduced pollution of the atmosphere.

TRANSPORTATION OBJECTIVE:

Since 1973, the Department of the Environment for Northern Ireland (DoENI) has been the single road and traffic authority for all roads. In recent years the futility has been recognised of continually attempting to build roads on the "predict and provide" basis to cater for increasing traffic demand. In January 1995, DoENI announced its intention to place a greater emphasis on the use of public transport and other modes of transport more environmentally friendly than the private car. In recognising the benefits that the bicycle provides as a viable alternative to some car journeys, DoENI is committed to providing facilities that will improve the safety of cyclists and to actively encouraging increased cycle use as a mode of transport.

NATIONAL CYCLING NETWORK:

With the introduction of the National Lottery in 1994, the Millennium Commission was established to oversee the expenditure of those funds allocated to both public and private initiatives through to the year 2000. Sustrans, a sustainable transport charity, was successful in being awarded the first grant from the Commission in September 1995. This was for the construction of the first stage of the National Cycle Network (NCN), extending to some 5,000 km of identified cycle route throughout the UK and linking all of the major urban centres of population. Since 1995, Sustrans has been managing the introduction of the 450 km of this route that will comprise the NI part of the network with the support and assistance of DoENI. Many different bodies, both private and public, will be involved in the delivery of the project and it is seen that this will form the skeleton of a cycling network which will serve the needs of both recreational and utility cycling. An additional 370 km length of cycle route (largely on low trafficked rural roads) was opened in 1998 in the west of the province and linking into the Republic of Ireland. This will be connected to the NCN in due course and it is expected that other cycling links will also be added in years to come.

A grant of 2.526 Mecu (£1.8 million) was made available for the first stage of this project from the European Regional Development Fund. While the DoENI contribution was not anticipated to exceed about one third of the total cost, because of the scale of the project it was necessary to carry out an investment appraisal to verify the benefits likely to accrue from the investment of public funds. An investment appraisal of this nature had not previously been undertaken on a project of this kind. This appraisal demonstrated, though, that when all anticipated costs and benefits to the economy of NI were considered, a net present value of some 127 Mecu (£89 million) would be realised from an anticipated expenditure of 15.7 Mecu (£11 million). About two-thirds of the benefit will be generated from an increase in tourism in the province. Implementation of the network is gathering pace and it is confidently expected that the first stage of the network will be fully in place by the end of the plan period.

NATIONAL CYCLING STRATEGY:

The National Cycling Strategy was published in Great Britain in July 1996. It did not apply in NI, but DoENI is fully supportive of its objectives. To advance cycling in a co-ordinated way in the province, DoENI has recently established the Northern Ireland Cycling Forum. Its membership is drawn from a very wide spectrum of interest, including Government Agencies, cycling interest groups, Health Promotion Agency, public transport operator, District Councils and Chamber of Commerce. With this broad range of interest and ownership of agreed objectives, it is anticipated that a meaningful and achievable growth in cycling will be achieved. At the time of writing, the Forum has had its first meeting. It will advance its business through Working Groups, of which three have commenced deliberations. These will seek to establish meaningful targets and objectives for increased cycling in NI, will determine appropriate methods of monitoring cycle use and will recommend means by which cycling can be promoted as an attractive way to travel. Other working groups will be established as needs are identified and resources permit.

VISION FOR CYCLING:

The objective for cycling in Northern Ireland is to implement a network of cycle routes in each of the major urban areas of population. These will seek to overcome some of the deterrents to cycling, such as concerns over safety and comfort, and to promote much greater cycle use. In all cases the routes will be well signed. They will integrate with the NCN and link public transport interchanges, employment, residential, shopping and leisure facilities. Where possible they relate closely to the needs of children cycling to school.

ONGOING WORK:

Various measures are currently ongoing to improve cycling safety. Within the last five years:

- 5.4 km of bus lane have been introduced in Belfast. Cyclists are permitted access to these;
- 170 traffic calming schemes and 20 mph zones have been introduced in urban areas. While many of these do not incorporate specific measures for cyclists, the lower speed of motorised traffic reduces potential conflict;
- 13 km of new off-road cycle lane have been constructed;
- a policy has been introduced whereby all alterations to the road system will be subjected to a cycle audit to ensure that the needs of cyclists are properly considered. In addition, all road schemes exceeding 143,000 Ecu (£100,000) are subjected to an independent safety audit to ensure that the safety of each category of road user is not compromised;
- a parking policy has been prepared (shortly to issue for public consultation) which will require the provision of cycle parking facilities in new developments;
- legislative changes have been initiated to allow the introduction of toucan crossings, at which both pedestrians and cyclists are afforded traffic signal controlled crossing of the public road; and
- a programme has been introduced to provide cycle parking facilities in town centres and at public transport interchanges in advance of demand.

SAFER ROUTES TO SCHOOL:

The Government has recently confirmed its sustainable transport programme. Attention has been drawn to the extent to which the school run contributes to the morning peak traffic flow. The Safer Routes to Schools Project is a five year national demonstration project which started in England in the summer of 1995. The project aims to encourage children to walk and cycle to school instead of being taken by their parents. DoENI has begun an examination of the issues to be addressed in developing such projects for NI. It is anticipated that projects of this nature will be resource intensive. Pilot studies will be undertaken within the next year to assess how benefits can be maximised from such resources as can be made available.

ROAD SAFETY:

For many years it has been recognised that our educational system must equip young people with the skills necessary to cope with everyday life after school. In this context one of the most important lifeskills is the ability to cope with road and driving skills as they exist in NI. A General Certificate of Secondary School Education examination subject in Motor Vehicle and Road User Studies has been introduced. This course is open to students throughout the UK. In addition, a practical cycle proficiency training scheme is offered to all school children.

As with other parts of the UK, NI has an end-of-century casualty reduction target. In NI this is to reduce by one third the total number of fatal and serious casualties by one third based on the 1981-1985 average. Progress has been very encouraging, with a reduction of 28% having been achieved by the end of 1997. In promoting increased walking and use of the bicycle, a close monitor will be maintained to ensure that the target is not achieved to the detriment of road safety.

MOVING FORWARD:

It is anticipated that a change in travel patterns from use of the private car to walking, cycling and public transport will only come as a result of an attitudinal change on the part of the travelling public. As with many changes of public attitude, this may well be a protracted exercise.

ON THE CROSSROADS BETWEEN AREAS AND ERAS: CYCLING IN HUNGARY

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ON THE CROSSROADS BETWEEN AREAS AND ERAS - CYCLING IN HUNGARY 1999

This should be an overview of the current situation and of the near future in the field of everyday cycling in Hungary, with special attention to our national particularities. Since with the economic crisis cars are becoming an increasingly expensive means of transport for Hungarians, there is a strong potential for the promotion of cycling, provided we manage to combine it with public transport in an attractive way (unlike today when services are poorer and poorer). Deteriorating public security and the old-fashioned attitude of the police make our task more difficult. The positive examples from the European Union could help us in a constructive way, as well as our eventual status as an international "gateway" for cycling activism towards the Balcanic countries.

AN DER KREUZUNG ZWISCHEN REGIONEN UND ZEITALTERN - RADFAHREN IN UNGARN 1999

Dieses Referat mochte einen Überblick über die gegenwertige Situation und die nahe Zukunft des taglichen Fahrradverkehrs in Ungarn geben, wobei unsere nationalen Eigenheiten besonders berücksichtigt werden. Da aufgrund der Wirtschaftskrise der PKW für die Ungarn zu einem immer teureren Verkehrsmittel wird, besteht für eine Förderung des Fahrradverkehrs ein starkes Potential, sofern es gelingt, eine attraktive Verbindung zwischen dem Fahrradverkehr und dem öffentlichen Verkehr zu schaffen (im Gegensatz zur heutigen Situation, wo die Leistungen immer schlechter werden).

Eine Verschlechterung der Situation in puncto öffentliche Sicherheit und die altmodische Einstellung der Polizei erschweren unsere Aufgabe. Die positiven Beispiele der Europäischen Union konnten uns auf konstruktive Weise ebenso behilflich sein, wie unser Status als internationales "Tor", das dem Fahrradaktivismus den Weg in Richtung Balkan eröffnet.

NA KRIŽIŠČU PODROČIJ IN DOB: KOLESARJENJE NA MADŽARSKEM 1999

To naj bi bil pregled trenutne situacije in bližnje prihodnosti na področju vsakodnevnega kolesarjenja na Madžarskem, s posebnim poudarkom na nacionalnih posebnostih. Odkar zaradi ekonomske krize avtomobili postajajo vedno dražji način prevoza za Madžare, obstaja močan potencial za promoviranje kolesarstva, pod pogojem, da nam ga uspe kombinirati z javnim prevozom na privlačen način (v nasprotju s trenutnim stanjem, ko so dejavnosti vse slabše).

Slabšanje javne varnosti in zastarel odnos policije otežujeta našo nalogo. Pozitivni primeri iz Evropske unije bi lahko na konstruktiven način pomagali, enako tudi naš status mednarodnega "izhoda" za kolesarje v balkanske države.

ON THE CROSSROADS BETWEEN AREAS AND ERAS: CYCLING IN HUNGARY

Today it is still unsure whether the development of cycling in Hungary will take on a faster pace than in the past 10 years. The decade that follows the turn of the millenium will show whether the development of cycling infrastructure will receive sufficient support from the state in the cross-border Euroregions as well as in the inner regions of the country, and whether cycling can be made as popular there as it is in the member states of the EU.

In 1996 Hungary (93.000 km²) saw the emergence of a national strategy that will aim at doubling the length of the bicycle path network by the year 2000, thereby reaching the mythical 2000th kilometer. This strategy was put forward by the cycling NGOs under the direction of KEROSZ (Hungarian Bikers' Alliance) and was developed together with the experts of the Ministry of Transport. However, the realisation of this aim is a special and difficult task in our country.

The majority thinks that only the poor people of the countryside have recourse to bicycles and that somebody who cycles to work and school in a big town is like a Japanese suicidal kamikaze. At the same time the politicians are constantly referring to the Japanese as to people who work efficiently and relentlessly, and what is more, respect their leaders. Unfortunately, they fail to mention the multitude of Japanese or European men and even more women who take the bicycle to go to work every day and use modern, gigantic bicycle racks.

Nevertheless, public opinion seems to change slowly, because more and more people see with their own eyes what is happening for example in the Netherlands, Austria or Denmark. Many of the richer Hungarian families spend their summer holidays in the neighbouring Austria cycling along the secure paths built along the shores of the Danube.

More and more people of the 10 million inhabitants of the country use the bicycle as only a means to develop fitness, but this is also very important. The most popular cycling site in summer is Lake Fertő (Neusiedler-see) at the western border with paths all around. However, most of the lake's surface is situated in Austria. Here again the Hungarians could learn from their neighbours, since there tend to be much more Austrians than Hungarians on these paths, and often they even come over to us across the border. Not far from here, on the Eurovelo bicycle path in one or two years' time it will be possible to ride on a cyclepath along the Danube towards Budapest on the Slovakian border. There is a project to build 400 kilometers of cycling paths on the shores of the Danube that will continue later in the territory of the former Yugoslavia. In Budapest and its neighbourhood there are already 100 kilometres on the two sides of the Danube.

The shores of Lake Balaton (the "Hungarian sea") also constitute a good holiday area, but the Spring and Autumn seasons are more favorable to cyclists because then there is less car tourism. The construction of the 200 kilometre long Balaton Bicycle Ring encircling the lake was started in 1998 on the initiative of the Hungarian Cyclists' Federation.

In the eastern parts of the Country, in the flat Great Plain and on the shores of the river Tisza (where according to the plans another Eurovelo route will connect Slovakia to Yugoslavia), there is a living cycling tradition. In towns like Hódmezővásárhely, Orosháza, Békéscsaba one can see as many cyclists as in similar Dutch towns. Unfortunately, we also encounter the same problems with theft. Many guarded bicycle racks will be built in this area in the forthcoming years.

The greatest recent changes in the field of cycling have happened in Budapest. It is thanks to the Friends of City Cycling group and to Dutch environmental organisations and experts that a new era started in 1990 in the issues of cycling. The Hungarian capital with its two million inhabitants has a bicycle project leader working on them in continuous collaboration with cyclist organisations. The length of cycle paths is now ten times greater than in 1990 (120 km today). Two thirds of them are continuous itineraries. This length will double before 2005, together with the number of cyclists. The latest project is to place bicycle racks to railway and underground stations. The task of their maintenance will be undertaken by cycling organisations. Unfortunately, the accomplishment of these projects in Budapest is being questioned nowadays because of increasing lack of money.

The aforementioned results would have been much more difficult to realise -even slowly and intermittently- had it not been for two very important achievements. The first is the commitment of cyclists, experts and politicians to work together on the improvement of the conditions of cycling. The collaborative practice developed in past years has been reinforced by the Coordinating Committee for Cycle Activities that controls the implementation of the cycling strategy. It coordinates the work of several ministries, and pays special attention to the integration of cycling issues in the general transport policies. The committee is composed of the representatives of six ministries as well as of the delegates of NGOs who are there as equal partners. They have received the right to make proposals as to the use of public money and to join other state projects if it helps the cause of cycling.

The other important achievement is the legal guarantee set down in law by the Parliament that will ensure the financial resources necessary to the carrying out of the determined tasks. According to this law unique in Europe, it is compulsory to put aside enough money from car fuel taxes to build a minimum of 100 km of cycle paths every year. This fund can be increased from other state sources as well, and this is one of the most important tasks of the aforementioned Coordinating Committee for Cycle Activities.

In 1896 the millenium of the country's foundation was celebrated in Budapest. In 1996 the delegates coming to the Annual General Meeting of the European Cyclists' Federation cycled along the avenue that was built one hundred years earlier (same as the underground railway running underneath!). When the avenue received a new coating for the celebrations, a cycle path was established on it thanks to the requests of the cyclists. This bicycle path is an important symbol of Hungarian bicycle traffic that reminds us of the past (and of the successful lobbying), but which at the same time points to the next millenary. It has to be very well protected, because many do not feel the need yet for cycling facilities. However, the number of cyclists increases as more bicycle paths are built. This is an experience we share with other countries in Europe, one that has to be accepted as an axiom in a country that is striving to become part of the European Union at the beginning of the next millenary.

In the following ten years the importance of the development of regional cycle paths will grow. Inside the borders of Hungary, it is in certain big towns and in the National Parks that are in their neighborhood that the first bicycle-friendly regional networks will be introduced (e.g. Székesfehérvár, Siófok and the National Park of Lake Balaton, or Debrecen, Szolnok and the National Park of Hortobágy). Even more significant are the regions that stretch across the borders (the so-called EU-regions): e.g. Győr, Sopron (H), Bratislava (SLO), Vienna, Eisenstadt (A) and the National Park of Lake Fertő (Neusiedler); or Szeged (H), Timisoara (RO), Subotica (YU) and the National Park of the rivers Körös and Maros. In order to link these regions, the two planned routes of the ECF Eurovelo project crossing Hungary will be an excellent means, since one follows the river Danube, the other the river Tisza. This way Hungary will be connected to the European Bicycle Road Network. The realisation of these plans depends on the cooperation of cycling organisations, local inhabitants and state institutions, at least as much as on the support of the European Union, whose member-states have already much contributed to the development of Eastern European bicycle transport by sharing their experience with us.

DEVELOPMENT OF CYCLING INFRASTRUCTURE IN SMALL SETTLEMENTS

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DEVELOPMENT OF CYCLING INFRASTRUCTURE IN SMALL SETTLEMENTS

Need for developing cycling routes and facilities in predominantly rural country as counterbalance to expanding individual passenger car transport - an underestimated challenge of Central-European post-communist countries tailored to Slovak situation.

Role of bicycle transport and possibilities for cycling infrastructure development in the framework of environmentally friendly revitalization of rural areas. Increasing accident-rate involving bicycles in the settled and built up areas. High levels of competence, responsibilities, legislation, powers, mandates and funding, information, adequate and comprehensive environmentally friendly education, change in thinking of the population as preconditions for balanced and effective cooperation of experts, national and local government and communities in pursuing the development of bicycle mode of transport as an inevitable component of global policy of sustainable transport for 21st century.

ENTWICKLUNG EINER FAHRRADINFRASTRUKTUR IN KLEINEN SIEDLUNGEN

Die Notwendigkeit der Entwicklung von Radrouten und Radverkehrsanlagen in einem überwiegend ländlich geprägten Land als Gegengewicht zum zunehmenden motorisierten Individualverkehr - eine unterschätzte Herausforderung für die postkommunistischen Länder Mitteleuropas, dargestellt anhand der Situation in der Slowakei. Die Rolle des Fahrradverkehrs und die Möglichkeiten zur Schaffung einer Fahrradinfrastruktur im Rahmen der umweltfreundlichen Revitalisierung von ländlichen Gebieten. Zunehmende Anzahl von Fahrradunfällen in besiedelten und verbauten Gebieten. Ein hohes Niveau an Kompetenz, Verantwortungsbewußtsein, Gesetzgebung, Befugnissen, Mandaten und Finanzierung, Information, adäquater und umfassender Erziehung zur Umweltfreundlichkeit und ein Umdenken der Bevölkerung als Voraussetzungen für ausgewogene und effiziente Zusammenarbeit zwischen Experten, nationaler Regierung, Lokalverwaltungen und Gemeinden zum Zweck der Entwicklung des Fahrradverkehrs als unverzichtbare Komponente der globalen Politik für eine nachhaltige Verkehrsentwicklung für das 21. Jahrhundert.

RAZVOJ KOLESARSKE INFRASTRUKTURE V MAJHNJIH NASELJIH

Potreba po razvoju kolesarskih poti in možnosti v pretežno podeželskih naseljih kot protiutež razširjanju avtomobilskega prevoza za individualne potnike - podcenjen izziv centralnoevropskih, postkomunističnih držav, ukrojen za primer Slovaške. Vloga kolesarskega transporta in možnosti za razvoj kolesarske infrastrukture v okviru okolja prijazne revitalizacije podeželskih področij. Visoka stopnja kompetentnosti, odgovornosti, zakonodajnosti, moči, mandatov in sofinanciranja, informacij, primerne in razumljive okoljevarstvene vzgoje, spremembe v mišljenju prebivalstva kot predpogoji za uravnovešeno in efektivno sodelovanje strokovnjakov, državnih in lokalnih oblasti in skupnosti pri doseganju razvoja prevoza s kolesi kot neizbežne komponente globalne politike trajnega transporta za 21. stoletje.

DEVELOPMENT OF CYCLING INFRASTRUCTURE IN SMALL SETTLEMENTS

The social changes in Central and East European countries in transition are accompanied by most remarkable and visible phenomenon of a fast growth of the number of motor vehicles resulting in the increase of traffic accidents involving any traffic participant, especially in the built-up areas. Traffic accidents involve increasingly the most vulnerable - cyclists, pedestrians, children and elderly (1,2).

Various development projects and foreign loans supported by car producing industry and accepted by state authorities aim at improved conditions for the increasing demands of car drivers (motorways and highways development and construction, petrol stations). Problems of agglomerated areas and their existing transport infrastructure are dealt with only marginally (throughways, by-passes), although conflicts between demands and capabilities related to meet this boom requirements are growing fast especially here. In principle, local government authorities are made responsible and have to carry the burden of the status, maintenance, development of local roads, ensuring safety for all participants, and meeting transport demands of every mode of transport - including bicycle. The challenge of creating conditions and raising funds for the development of cycling infrastructure based on experience and models of cyclist developed European countries is obvious. At the same time these actions are very urgent because the car driving expansion takes away every piece of land available (roads, parking) and uses various methods to make the inhabitants believe it is inevitable and irreplaceable in towns. Cycling as a mode of transport is marginalized and shifted into the area of cycle-tourism, roads and paths developed in the open space areas. Only traditionally cycling towns and small settlements have the capacity to turn this trend back (3).

The previous efforts of environmentally friendly oriented transport engineers (literature from Poland, Hungary, and former Czecho-Slovakia) and their comprehensive approach to cycling mode of transport, especially in large towns underestimated the importance and share of rural settlements, underestimated the capacity of villages, not only as attractive cycle-tourist destinations but also as places capable of reviving, promoting and developing everyday cycling. Comeback to rural development, return to traditional values of historical and cultural development of settlements in the Central European area is currently becoming one of positive features of its social changes. Due to the controlled urbanizing and gradual depopulation of villages during the last 50 years the majority of small settlements and their transport infrastructure - local roads owned and maintained by municipalities - are in a very bad shape. Without targeted financial 'injections' into a comprehensive development of environmentally friendly modes of transport (cycling, walking), and without active citizen participation and local government support even the best professional

concepts, projects, implementation designs remain only visions. Car transport expansion - whether car-tourism or gradual saturation of village roads by undesirable transit without any optimizing and guidance may damage rural environment to much greater extent and with graver consequences than the already existing damage in large towns and cities. One of the prevention chances is offered by the "Rural Development Program" and "Village Revival" (4). This is one of the acknowledged instruments for saving and developing the individual elements of rural environment - small village, little town, micro-region. The Revival Program is based on the principle of recovering devastated rural environment or preserving their identity and less impaired natural environment. The main feature of the program is increased participation by citizens, local governments, and professionals. At the same time it also means raised awareness of roles and responsibilities of national government, local government as manager of public assets, citizens and relevant professionals as designers and implementers of the revival.

In the area of cycling development as a component part of rural development there is a possibility to initiate from "the roots" creation of "car-free villages", villages appealing to cyclists, "villages for cyclist and pedestrians".

To lay a strict dividing line between urban and rural type of settlement is difficult in general, regardless of the criteria, whether it is area demarcation of the settlement or population or way of living, or transport service, etc. In the post-communist countries various trends of equalizing villages and towns or getting village lifestyle closer to urban lifestyle had devastating effects on small settlements losing their identity. While in the first half of the 20th century it was still possible to characterize villages by the criteria of their continuous historical development and natural environment of the settled area (landscape, housing and transport groundplan: stream-along, road-along, row housing, community type), and it was possible to identify settlement structure by regions, in the period of 1950-1998 the majority of small settlements underwent an uncontrolled and non-regulated development and the new housing development bear no signs of original regional architecture. Large agricultural facilities (at the margins of built-in areas) had negative impact on transport links inside majority of villages. Various gardening areas and recreational cottage areas or concrete blocks of flats in urban mini-settlements had similar effect. They influenced size of population and transport infrastructure.

The term "rural" has a number of various interpretations evidenced by the following definitions of rural area from the population point of view (5):

Switzerland, Portugal, Sweden	population less than 10 000
Scotland, Australia, New Zealand	population less than 1 000
Canada (while population density is less than 400/km ²)	population less than 1 000
Austria (Gemeinden)	population less than 5 000
Spain (Municipios)	population less than 2 000
Denmark, Norway	population less than 200
Czecho-Slovakia (in the past)	population less than 2 000
Slovakia at present	population less than 5 000

This criterion is most suitable for Slovakia as its settlement structure is characterized by high proportion of settlements with population less than 5 000 (87.3%) accommodating for 43.7% of population of Slovakia.

Slovakia characterized by its considerable territorial variety, differentiated density of population, high level of urban development and well developed transport infrastructure for every mode of passenger transport may serve as a kind of model or pilot country for a future comprehensive cycling transport development project in European countries in transition.

The area of the Slovak Republic is 49 030 square kilometers, out of this 84.4% is represented by rural areas. 2, 343 400 inhabitants (i.e. 43.7% of population) live in settlements with less than 5 000 inhabitants.

According to OECD typology based on the proportion of population living in rural communities there are three types of regions in Slovakia: (see Figure....)

- predominantly rural regions (more than 50% of rural population - 1, 943 600 or 36.2% of overall population)
- significantly rural regions (rural population represents 15-50% - 2,731 200 or 50.9% of population living in these regions)
- predominantly urban regions - with less than 15% (693 000 or 12.9% population living in these regions).

These data clearly shows that despite the pressure exerted in the past 50 years Slovakia remains a rural country. With the increased urban development trends the rural population age structure becomes more of pre- and post-productive age. Higher labor cost and higher purchase power groups concentrate in urban regions. In early 90s the urban development process slowed down and rural settlements continue to stagnate even despite certain revitalizing efforts. Workforce mobility depending on economic and transport infrastructure only confirms the high centripetal force and high inter-regional commuting to urban regions.

The most attractive areas of Slovakia as for natural beauties, preserved cultural heritage, unique rural architecture, traditional arts and crafts, customs or cuisine can be found in the rural settlements mainly. But it does not always meet the needs and

criteria for good quality of transport service or access. Out of 2 712 communities of rural type, 353 settlements representing 13.02% have problems of insufficient frequency of public transport service (1 bus or train connection for 100 inhabitants per day as minimum), inadequate width and direction and surface of the roads, pedestrian access to public transport facilities. Analyses do not deal with present status or possibilities of cycling as a mode of transport. They do not analyze possibilities of preserving and adjusting this attractive phenomenon in respect to cycle- rural tourism or cultural cycle-tourism (visiting cultural sites on bicycles). Local roads are shared by local citizens and cycle-tourists and thanks to the density and layout of local roads and adjacent field or forest roads it will be easy to develop not only cycling paths but other facilities (service, parking, refreshment...). It is therefore extremely important to progress from partial solutions and paths for cycling tourists only (quite frequently only marked on maps or by cycle-tourist signs), and develop a comprehensive and blanket solution of cycling transport in all its forms. This problem is not unique and it provides an opportunity for Slovakia to participate in EU supported projects for rural development. Cycling transport does not recognize any borders. Development programs related to environmentally friendly modes of transport, possibly funded also by EU in the future, could be of interest to other Central European rural countries joining EU.

Based on the experience of cycling in developed countries of the world there are many proven instruments and methods for achieving a faster development of cycling as a transport mode in small settlements by developing adequate cycling infrastructure and ensuring that cycling provides full service for the settlement. There is no doubt that the Slovak Republic "Village Revival Program" represents one of them. The program was developed as early as in 1992, but it stagnated more or less. It was only in 1997 when Slovakia became a member of European Working Society for Rural Development. This meant more positive impulses to intensify the application of principles and rules in settlements to qualify for the program of their revival. As for now, there has not been many specific results achieved yet in the efforts to make the transport environmentally friendly, including development of cycling infrastructure. But it seems that comprehensive solutions anchored in the "Methodology and Guidelines" (6) are presently the most efficient method of attracting attention to cyclists in settlements and create conditions for cycling development. For example, it requires the construction activities to include development and reconstruction of public utilities (roads, pavements, cycling paths), maintenance of public areas, ensuring their safety, and environmental measures include the preference of environmentally friendly modes of transport. In the pre-design, design, and implementation stages it is inevitable to raise awareness and co-operate with citizens and citizens' associations (i.e. cycle-tourists). Transport specialist as an ultimate co-author of development concepts and a designer of certain (although limited in time and funds) partial solutions is given an opportunity to present their professional competence and to defend cyclists demands in an adequate form.

Especially in small settlements urban planners tend to perform this role. Transport specialists are aware of dangers of it. Close co-operation with local governments and permanent pressure exerted on state administration and its authorities in the process of legislation drafting, technical standards development can help to prevent these trends.

Methodology and guidance for individual programs actively participated by the Ministry of Environment provide certain guarantee of co-operation between state government and local governments (although in the case of Slovakia the Ministry of Transport as administrator of state road infrastructure is avoiding this topic). As in accordance with development and construction Act global activities start with designs and projects based on landscape and land-use plans (settlement development plan, urban plan), transport specialists cannot be avoided in the development stage. This should provide certain guarantee that any settlement development concept within the Revival Program will adequately consider cycling development issues. As urban development plans (including transport) are subject to public hearing process, customer, i.e. local government and citizens may take part in negotiations regarding various design developed. This ensure closer links and shared responsibility between specialist as designers of cycling infrastructure and their future users.

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TRAINS AND BUSES AND BIKES: DUTCH POLICY, DUTCH PRACTICE

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TRAINS AND BUSES AND BIKES: DUTCH POLICY, DUTCH PRACTICE

The government of The Netherlands wants to curb the growth of the use of the car and to stimulate the use of public transport and bicycles. Door-to-door-transport and the concept of the transport-chain are increasingly becoming the guiding principle for the development of public transport. Use of the bicycle in the preliminary stage of the transportchain can be stimulated by providing for sufficient, efficient, safe, and dry parking facilities at bus stops and railway stations.

The paper will explain how the Ministry of Transport, Public Works and Water Management has put its responsibility for bicycle parking facilities near bus stops and railway stations into practice. Besides explaining about the implementation of policies it will go into a number of practical aspects.

ZUGE, BUSSE UND FAHRRADERNIEDERLANDISCHE POLITIK, NIEDERLANDISCHE PRAXIS

Die Regierung der Niederlande mochte dem wachsenden PKW-Verkehr Einhalt gebieten und die Verwendung von öffentlichen Verkehrsmitteln und Fahrrädern fördern. Luckenlose Beförderung von Tür zu Tür und das Konzept der Verkehrskette werden zunehmend zu Leitgrundsätzen für die Entwicklung des öffentlichen Verkehrs. Der Gebrauch des Fahrrads in der Vorstufe der Beförderungskette kann durch die Schaffung ausreichender, effizienter, sicherer und trockener Abstellmöglichkeiten für Fahrräder an Bushaltestellen und Bahnhöfen gefordert werden.

Das Referat erläutert, wie das Ministerium für Verkehr, öffentliche Arbeiten und Wasserwesen seine Verantwortlichkeit für Fahrradabstellmöglichkeiten in der Nähe von Bushaltestellen und Bahnhöfen umgesetzt hat. Es erklärt, wie formulierte Strategien realisiert wurden, und geht auf eine Reihe praktischer Aspekte ein.

VLAKI IN AVTOBUSI IN KOLESA - NIZOZEMSKA POLITIKA, NIZOZEMSKA PRAKSA

Vlada Nizozemske želi omejiti naraščanje uporabe avtomobilov in stimulirati uporabo javnega prevoza in koles. Prevoz od vrat do vrat in zamisel o prevozni verigi vse bolj postajata vodilna principa za razvoj javnega prevoza. Uporabo koles v predhodni stopnji prevozne verige je mogoče stimulirati z zagotavljanjem zadostnih, uporabnih, varnih in suhih parkirnih možnosti na avtobusnih postajališčih in železniških postajah.

Referat bo podal razlago, kako je ministrstvo za transport, javna dela in ureditev voda udeležilo svoje zadolžitve za ureditev parkirišč blizu avtobusnih postajališč in železniških postaj. Ob razlagi te vključitve bodo predstavljeni tudi številni praktični vidiki.

TRAINS AND BUSES AND BIKES: DUTCH POLICY, DUTCH PRACTICE

INTRODUCTION

The traffic policy of the Dutch government changed drastically in 1990. The focus shifted from the construction of main infrastructure to an integrated approach of traffic and transport systems. In addition, following policy (which is based on the existing need) has been replaced by steering policy (in which the need is influenced). The objectives aim at improving the quality of life and accessibility. In order to accomplish this, it is deemed necessary to slow down the growth of car use, which would require a good availability of alternatives for the car. As an individual means of transport as well as in combination with public transport, the bicycle is such an alternative. For short rides, the bicycle is for many people an excellent means of transport that can compete with the car as far as travel time is concerned. This is supported by the fact that in the Netherlands the bicycle is used intensively in the cities. Also in combination with public transport, the bicycle can replace a share of the longer car rides. In practice however, the relatively long pre and post transport often forms an obstacle for car drivers to make the switch to public transport. This is why focus in the Netherlands is more and more emphatically on making the best possible combinations of means of transport in the door-to-door transport chain.

The chain of public transport and bicycle combines the advantages of public transport with those of the bicycle. Trains and regional buses can transport travellers across large distances in a quick, direct and comfortable manner. Transport to and from the bus stop or railway station can be quick and efficient by bicycle. Only if the walking distance is less than 10 minutes, walking is more efficient.

In the Netherlands, the train + bicycle combination in particular has been used for ages. An average of 30 to 40% of all train travellers come to the station in their place of residence by bicycle, while in the place of arrival 14% travel from the station to their destination by bicycle. The bus/tram/subway + bicycle combination has less of a history than the train + bicycle combination. On the residence side, an average of 14% come to the stop by bicycle. On the activity side the average is only 3%.

Pilot projects and research, carried out within the framework of the Bicycle Masterplan project, have shown that there is still a large potential for the bicycle share in the pre and post transport of the train, particularly in commuter traffic. In addition to comfortable and fast bicycle routes, an important precondition would be the possibility for safe, easy, and preferably also dry parking of the bicycle near the railway station or bus stop. This calls for a sufficient amount of bicycle facilities near railway stations and bus stops. If this could be realised, it would be more inviting for those people that do not live within walking distance from the station or bus stop to use the bicycle + train or bus combination when they travel. This would increase the so-called feeder area of stations and stops by a factor of 10.

To encourage this development, the Dutch government - within the framework of the Bicycle Masterplan - has developed a number of initiatives to improve and expand the parking situation near stations and bus stops in collaboration with public transport companies and municipal councils. The following two paragraphs will elaborate further on the activities that have been initiated and their results.

BICYCLE PARKING FACILITIES

Companies that provide intercity bus transport have only just begun to realise that the bicycle can improve their competitive position compared to that of the car. This realisation has increased since the start of a process to improve the effectiveness and efficiency of public transport: despite less government subsidising, better service through custom-made transport, and therefore an increase in the need to determine priorities. As a consequence, transport companies strive for higher travel speeds. This would require straight bus routes (remove detours) and fewer stops. For travellers this means that the distance between their homes and the bus stop would increase, which would often make cycling to the stop more appealing than walking. An important precondition posed by (potential) travellers in that case is that the bicycle can be parked near the stop safely, easily and preferably dry. Bicycle parking facilities near bus stops are still not prevalent in the Netherlands. As privatisation of bus companies increases, more and more companies are prepared to construct bicycle parking facilities near stops.

During the past few years, the Bicycle Masterplan has encouraged this process by initiating and financially support pilot projects. Qualitative research has also been undertaken to determine the factors that determine success and failure in the realisation of bicycle parking facilities near stops. This has provided better insight into the effects of these measures. It has shown, for instance, that a sufficient amount of safe bicycle parking facilities can contribute to the increase of the share of the bicycle in the pre transport of fast intercity bus lines. As the use of the bicycle in the pre transport section becomes more inviting, more people will opt for the bus. This means an increase in revenues for the bus company. In short: the realisation of high-quality bus connections, combined with high-quality bicycle parking facilities, will result in more satisfied bus travellers and better company results.

The experience gathered in the pilot projects plus the research results have been used by the Ministry of Transport, Public Works and Water Management to make recommendations for policy makers and executives working for public transport companies and municipal or provincial road authorities. This will help them to improve the quality of the bicycle + public transport chain. These recommendations distinguish two process steps:

1. First of all, one should determine at which stops bicycle parking facilities should be constructed (first). How do you determine this?

It is very important to adapt the supply of bicycle parking places to the demand. Practice has shown that it is not at all easy to find the right balance in this. Brimful as well as mysteriously empty bicycle parking facilities may be found near bus stops. Of course there are also existing stops without bicycle parking facilities where bicycles are parked. The relation between use and capacity should therefore be monitored closely. This may sound complicated, but in practice it is quite simple. It is simply a matter of sending someone out there to see how intensively bicycle parking facilities are being used. This method is advised for two reasons.

First of all because in this way it is much easier to determine how much expansion (or reduction) is needed than determining it from behind a drawing board. Secondly, because adding (or removing) bicycle parking facilities is a relatively inexpensive operation. In other words, adapting the capacity to the demand is best done in a flexible and practical manner. Existing bicycle parking facilities of insufficient quality should be adjusted or replaced. Bicycle parking facilities that are inferior and not theft proof could stop people from using the bicycle. Bicycle parking facilities that are only partially used, while bicycles are parked in the immediate vicinity, would be the first to qualify for this. Once the worst quality problems have been solved, priorities for the remaining stops may be determined on the basis of effectiveness.

2. The next step is to determine which bicycle parking facilities would qualify. Which ones are suitable, and where should they be set up near the bus stop?

Cyclists have a limited number of simple demands that a bicycle parking facility should comply with. They are related to the bicycle parking system and (the layout of) the parking. The five main demands are:

- a bicycle parking system that provides sufficient support and good attachment possibilities for the bicycle frame;
- a roofing;
- user-friendly measurements;
- lighting and
- (sometimes) bicycle lockers.

It goes without saying that the use of bicycle + bus becomes more attractive the more these demands are complied with. The immediate surroundings of the stop should also meet certain quality demands. These demands relate to:

- the distance between the bicycle parking facility and the stop;
- social control of the parked bicycles;
- the position of the bicycle parking facility related to the cyclists' approach route;
- the quality of this approach route.

The final demand, which is at least as important, concerns information to (potential) travellers about improvements in the stop facilities. People will consider alternative ways of travelling especially when something changes in their personal situation, such as moving house or a change in work location. Information about good bicycle parking facilities could at such a moment contribute in convincing people to start travelling by bicycle + bus. Regular bus travellers will usually notice the improvements. Providing information (leaflets, brochures, regional papers) is needed particularly for those people who (still) travel by car, and who will not easily notice any changes near the bus stop.

During the workshop, the recommendations and points of attention mentioned in this paper will be explained, using - among other things - some practical examples.

TAKING BIKES TO TRAINS

As early as 1993, research carried out by the Technical University of Delft showed that improvement of bicycle parking facilities near railway stations would result in a substantial increase of the number of people travelling by train. At the time - through various reasons - the primary party responsible, the Dutch railway company, Nederlandse Spoorwegen (NS), did not take any effective action on the basis of these results. The corporatization of NS in 1995, however, provided the appropriate trigger for the government to do just that.

The corporatization of NS intended to create a clear division of responsibilities. Transport of passengers and goods was left in the hands of independent companies of which NS Reizigers (Passengers) and NS Cargo were (and still are) by the far the biggest. The national government took responsibility for the railway infrastructure. The document outlining this agreement stated explicitly that bicycle parking facilities play an essential role in the transport of people to and from railway stations. These facilities are therefore considered to be an integral part of the railway infrastructure similar to, for example, platforms, stairs and tunnels in stations.

The first and foremost aspect of the Government's responsibility for these facilities is financial. As of 1996, the government, or to be more precise the Ministry of Transport, Public Works and Water Management, pays 100% of the costs related to the building and maintenance of bicycle parking facilities: facilities both in and near railway stations, guarded and unguarded, and the structures in which they are housed as well as the equipment - such as bicycle racks and bicycle braces.

A TWO STEP APPROACH

Having taken financial responsibility, it was then up to the ministry to determine its policy in this area. How much of the taxpayer's money should be spent on what? To answer this question a special working group was set up, consisting of representatives of the ministry and various divisions and business units of NS. Right from the start the group agreed that in order to stimulate people to use a bicycle to get to the station, bicycle parking facilities needed to be modernised and expanded. At the same time, it was clear that for obvious financial and practical reasons it would be impossible to modernise and expand facilities at all stations in one go. A two step approach was therefore adopted.

The first step was the formulation of the government's policy on bicycle parking facilities at stations that would be newly built or completely renovated. This also enabled the group to make a fresh start and focus on the demands of cyclists instead of trying to accommodate past building practices and inevitably getting bogged down in them.

REQUIREMENTS FOR NEW FACILITIES

· After extensive discussions, the group produced a draft set of requirements for new facilities based on the most recent insights in this area. These requirements deal with both availability of facilities and their quality.

The full text of these requirements is provided in an appendix to this contribution.

In almost every aspect these requirements were an improvement compared to the standards that had been applied, officially or unofficially, by NS in the past. The draft set was then sent for review to various interest organisations, such as the Dutch cyclists' union, Fietzersbond enfb. After having received a warm welcome from these organisations, the set of requirements was officially approved by the Ministry at the end of 1997. A brochure issued by the ministry of Transport, Public Works and Water Management, explaining the ministry's policy in this area and including the requirements, was sent to various interest groups and to all municipal councils.

EXISTING FACILITIES

In the following year, step two was taken. The purpose of this step was first of all to get a clear picture of financial and other implications of applying the set of requirements to all existing facilities. To this end all existing facilities were

examined on the spot by a team of specialists. They made an inventory of the necessary improvements and the number of extra facilities needed. This nation-wide inventory showed that there was a shortage of approximately 25,000 parking places - of which 18,000 unguarded and 7,000 guarded -and that all existing facilities should have to undergo major improvements. The costs involved in expanding and improving facilities at all stations was estimated at around 510 million guilders, or about 231 million Euro's. This figure however did not include costs related to the expansion and modernisation of facilities at two of biggest 'black spots', the central stations of Amsterdam and Utrecht.

After careful analysis and some minor adjustments, the ministry concluded that additional budget resources of around 292 million guilders (about 132 million Euro's) would have to be found to be able to implement the entire expansion and modernisation program. The issue was discussed in Parliament which urged the government to allocate sufficient funds to implement the program. At the end of January of this year the minister of Transport, Public Works and Water Management decided to make the necessary extra funds available to implement the program which is now planned to have been completed at the end of 2006.

APPENDIX

1 TEXT OF THE CONDITIONS

The conditions mentioned below indicate the framework within which the Ministry of Transport, Public Works and Water Management appraises proposals for investments in new bicycle parking facilities. The conditions marked with an asterisk (*) may be deviated from on the basis of considerations regarding space or spatial planning. Such deviations, however, should always be motivated.

The ownership of the property on which bicycle parking facilities are constructed, does not influence the manner of financing. Parking facilities near stations, for instance, that are placed on municipal property, can also qualify for Infrafund financing. NS Stations and the owner of the property will come to an arrangement regarding the use of the property on which the bicycle parking facility is placed.

A. GENERAL

1. Guarded as well as unguarded bicycle parking facilities are available at every railway station for both regular and occasional travellers.
2. Bicycle parking facilities are located at places that can easily be reached at or near railway stations, they offer sufficient space and have been designed in a responsible manner. The meaning of these concepts are described below.

B. LOCATION

General

1. Bicycle parking facilities are located at places at or near stations that can safely and immediately be reached by cyclists. Bicycle paths leading to the parking facilities will cross roads and paths for other traffic as little as possible.
- 2.* When there are several approach routes for bicycles near a railway station, the unguarded parking facilities are split into several clusters.

Guarded bicycle parking facilities

1. The walking distance from the farthest place in a guarded parking facility to the entrance of the railway station is not more than 200 meters.
- 2.* The walking route from the guarded bicycle parking facility to the entrance of the railway station is covered.

Unguarded bicycle parking facilities

- 1.* The walking distance from the farthest place in an unguarded bicycle parking facility to the entrance of the railway station is not more than 50 meters.

¹ In this case guarded means: either guarded by people or guarded electronically or mechanically.

2. Near railway stations that also have car parking facilities, the walking distance from the unguarded bicycle parking facility to the entrance of the railway station is shorter than that from the car parking facilities to the entrance of the railway station.²

3. For reasons of social safety, and to limit theft and vandalism, an unguarded bicycle parking facility is placed in such a way that users have a good view of the surroundings and vice versa.

C. CAPACITY

1. The total number of required bicycle parking places and the division between guarded and unguarded places are determined per railway station on the basis of the methods and procedures included in an appendix.³
2. At least once per year, the capacity is reviewed under the authority of Railned, to see if it is still in agreement with demand.⁴

D. LAYOUT

General

1. Both guarded and unguarded bicycle parking facilities are suited for the most prevalent types of bicycles.
- 2.* There are special provisions for irregular types and sizes and for bicycles with bicycle bags and children's seats.
3. Both guarded and unguarded bicycle parking facilities are socially safe. Points of attention in this regard are:
 - # maximum view and overall view;
 - # lighting level (day and night lighting);
 - # no dead-end paths;
 - # height roofing;
 - # width aisles.

Guarded bicycle parking facilities

1. The bicycle parking facilities are roofed. The roofing is above standing level (2.10 meters).
2. Bicycles are parked at one level, unless this is not possible due to limitations in the available space. In such a deviant situation, bicycles can also be parked in so-called high-low systems, or in double-stack parking facilities. The distance between bicycles (heart-to-heart distance) is 37.5 cm and the difference in height between 25 and 30 cm. Double-stack parking facilities are equipped with a so-called extending duct or another construction which makes it easy for cyclists to place their bicycle on the top stack.
3. The bicycle parking system in collective parking facilities that are guarded electronically, has a universal attachment possibility for the bicycle frame.⁵
4. The width of the aisles between bicycle parking systems is at least 2.10 meters. In bicycle parking facilities with double-stack parking facilities equipped with extending ducts, the width is 3.00 meters.
5. When cyclists who want to park their bicycles have to use stairs, these have to be equipped with a bicycle duct located at least 15 cm from the railing. The angle of inclination of ramps or stairs complies with the measurements recommended in a guideline.

Unguarded bicycle parking facilities

- 1.* The bicycle parking facilities are roofed. The roofing is above standing level (2.10 meters).
2. Bicycles are parked at one level, unless this is absolutely not possible due to limitations in the available space. In such a deviant situation, bicycles can also be parked in so-called high-low systems, or in double-stack parking facilities. The distance between bicycles (heart-to-heart distance) is 37.5 cm and the difference in height between 25 and 30 cm.
3. The bicycle parking system has a universal attachment possibility for the bicycle frame.

² Parking places for cars in this case does not include parking places for the disabled.

³ The English text of this appendix is available from the authors at request.

⁴ Railned is a division of NS financed and supervised by the government.

⁵ "Universal attachment possibility for the bicycle frame" means: the possibility to attach the frame of any regular type of bicycle to the bicycle parking amenity using any regular chain or brace lock.

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"VELOFAHRPLAN": THE TIMETABLE FOR CYCLING IN SWITZERLAND

"Cycling in Switzerland": Nine national cycle routes were opened in May 1998. A special feature of Cycling in Switzerland is the collaboration between cyclists and public transport. You can travel to the starting point for your holiday by train. Public transport for you and your bike will be provided for steep sections. A small booklet ("Velofahrplan", the timetable for Cycling in Switzerland) will give you easy access to connections and departure times. In this paper you can read more about this successful collaboration between cycling and public transport.

"VELOFAHRPLAN": DER FAHRPLAN FLÜR DAS "VELOLAND SCHWEIZ"

Zusammenfassung: "Veloland Schweiz": Im Mai 1998 wurden neun nationale Radwanderrouen eröffnet. Dank der Kombi-nation von Radfahren und öffentlichem Verkehr können Sie einfach zum Ausgangspunkt Ihrer Velo-tour gelangen. Grössere Steigungen oder Passstrassen können bequem mit Bahn oder Bus bewältigt werden. Der kostenlose Velofahrplan informiert Sie rasch und umfassend über die besten Züge ins Veloland Schweiz: Abfahrtszeiten, Transportkapazitäten und Preise. Lesen Sie weiter über diese weltweit einmalige Verknüpfung zwischen Radfahren und öffentlichem Verkehr.

URNIK ZA KOLESARJENJE V ŠVICI

"Kolesarjenje v Švici": maja 1998 je bilo odprtih devet nacionalnih kolesarskih poti. Posebna lastnost akcije "Kolesarjenje v Švici" je sodelovanje med kolesarji in javnim prevozom. Do začetne točke svojih počitnic se lahko odpravite z vlakom. Na strmih predelih bo za vas in vaše kolo poskrbel javni prevoz. Majhna brošura ("Velofahrplan", urnik za kolesarjenje v Švici) bo nudil enostaven dostop do povezav in časov odhoda. V tem referatu lahko preberete več o tem uspešnem sodelovanju med kolesarjenjem in javnim prevozom.

"VELOFAHRPLAN": THE TIMETABLE FOR CYCLING IN SWITZERLAND**"CYCLING IN SWITZERLAND": OPENING ON 30 MAY 1998**

"Cycling in Switzerland" was opened on 30 May 1998 after an extremely short planning and implementation period of three years. "Cycling in Switzerland" is backed by the "Cycling in Switzerland" foundation. This foundation includes all the partners with an interest in a comprehensive and also tourist promotion of cycling: all the cantons (represented by the Conference of Swiss Construction, Planning and Environmental Protection Directors), the Swiss Olympic Association SOV, Swiss Tourism ST, the Swiss Tourism Association STV, the Swiss Federal Railways SBB, Touring Club Switzerland TCS, the Swiss Transport and Environment Association VCS/ATE, the Cycling Club of Switzerland IG Velo Schweiz, Swiss Cycle and Motorcycle League SRB, Association for Transport, Sport and Recreation ATB, the Swiss Advisory Bureau for Accident Prevention bfu, the Association of Swiss Manufacturers, Wholesalers and Importers in the Two-Wheel Trade VFGL, the national energy-saving action programme Energy 2000 Fuels Department and the tour operator Eurotrek Eventure AG.

"Cycling in Switzerland" comprises today essentially:

- 3,300 km of signposted national cycle touring routes
- over 3,000 km regional signposted cycle touring routes linked to the national routes

- a close link with public transport and the first publication worldwide of a special "Cycling timetable"
- partnership with some 1000 catering institutions, such as hotels, restaurants, youth hostels, camp sites, bed & breakfast, farmhouses
- an information system with approx. 300 information boards along the nine national routes, the publication of three official route guides, as well as a national general map.

LINK WITH PUBLIC TRANSPORT

When planning the national routes, a series of criteria had to be borne in mind in order ultimately to achieve the objective of implementing nine attractive routes. Here below, only three objectives that are in connection with public transport are presented:

1. The national routes were intended, if possible, to open up all the geographical regions of Switzerland, thus the Jura, the Central Plateau and the Alps. On the Central Plateau and in the Alpine river valleys, it was possible to provide signposted routes which can be tackled comfortably by average cyclists. But not all chains of hills and mountains can be avoided. This particular feature of the Swiss landscape becomes a special attraction through the link with public transport. Switzerland has a very high quality range of public transport services. On the one hand, the network of routes is dense and, on the other hand, the routes are served frequently by services operating to a regular interval timetable from early in the morning until late in the evening. The obvious thing was thus to recommend cycling tourists to cover stretches with steep gradients or great differences in altitude, as well as sections difficult to ride by public transport.

2. On account of the extremely short planning time available, it was not possible to build new roads for certain stretches (with a few commendable exceptions). The national routes were signposted for the most part along existing roads. This had the advantage that the short planning schedule could be adhered to, and the disadvantage that some sections have to be covered along heavily used roads. This disadvantage can be avoided as the cyclists are given the recommendation to bridge dangerous stretches by public transport.

3. Cycle tourism is a particularly energy-saving form of tourism. For this reason, "Cycling in Switzerland" was supported, among others, by "Energy 2000", an action programme by the Swiss Federal Government to promote energy saving. Cycle tourism can extend its energy-saving position even further if the manner of travelling to and returning from the cycle tour is influenced: the journey by rail to the starting point requires just one eighth of the energy by comparison with the journey there by car. The journey there and back by public transport was therefore to be made as attractive as possible.

THE MEASURES FOR OPTIMUM LINKING WITH PUBLIC TRANSPORT

1. Creating transport capacity for taking cycles by train

During the planning process for the national routes, intensive collaboration took place between the "Cycling in Switzerland" project management and the Swiss Federal Railways (SBB), as well as the private transport companies. On stretches on which many cyclists were expected who would like to take their cycles by rail, bus or ship, the cycle transport capacity was increased or in part even newly created.

2. Simply functioning cycle transport

Loading the cycle oneself is simple as a rule: If a railway carriage is marked with a cycle pictogram, the cycle can be hung up on special hooks in the entrance vestibule. On other trains where self loading is permitted, the cycle can be hung on special hooks in the luggage car (also marked by an extra large cycle pictogram). Admittedly, cyclists with luggage must organise themselves well by taking their luggage off the cycle before loading and waiting at the right position on the platform where the luggage car will stop.

3. Fare concept

It is important for "Cycling in Switzerland" that a uniform national fare concept should apply for cyclists. In May 1998,

the SBB introduced a new fare concept. A day ticket or a short-stretch ticket can be bought for the cycle transport. A new introduction was a Cycle Pass allowing holders to take their cycles with them on the SBB network unrestricted for a whole year. The majority of private railways have joined in the new fare concept. A special arrangement applies for buses and ships for which a separate ticket still has to be bought for cycle transport.

4. Communication

The SBB explain the principle of loading cycles on trains and the fare concept in a brochure. In the timetables (in book form, on CD-ROM and also those displayed on platforms), those trains which may not be used for loading one's cycle are marked with a crossed cycle pictogram. As approx. 90% of trains are equipped for self loading of cycles, the SBB have decided to mark only those trains in the timetable which are banned for cycle self loading. On the train-formation indicators to be found on the platforms of large stations, it is possible to see where the luggage car or passenger car with cycle hooks will stop. As a result, cyclists can move to the right spot already in advance and avoid any unnecessary rush - an important aid for a smooth process of boarding. As a world innovation, the "Cycling Timetable" informs cycling tourists about the best connections to "Cycling in Switzerland" and possibilities for surmounting severe gradients or passes.

THE "CYCLING TIMETABLE"

In the two-part "Cycling Timetable", only those trains are listed which are equipped for self loading of cycles. Anyone wishing to take their cycle with them by rail, bus or ship, is well advised with the "Cycling Timetable". In it are the departure times, transport capacities and the prices for self loading of cycles. The "Cycling Timetable" is available free of charge at all larger stations in French, German and Italian. In the first part, the best trains for the journey to the starting points of the national routes are listed. When selecting the connections for these journeys, care was taken to include Switzerland's main centres of population (Zurich, Basel, Bern, Geneva-Lausanne).

In the second part of the "Cycling Timetable", the recommended stretches for loading along the national routes are to be found. Either in order to cope with severe gradients or passes, or to bridge a dangerous stretch, or as a tourist excursion or as a link between two national routes for which there is no suitable road available. All these recommended loading stretches are numbered with appropriate pictograms for rail, bus or ship. These numbered pictograms are marked in the official route guides, as well as in the official general map (cf. figure 1). Cycling tourists can read the recommended loading stretch from the map and find the departure times, the transport capacity, the prices and the telephone number in case a reservation is necessary (e.g. for buses) in the Cycling Timetable under the appropriate number.

This worldwide unique link between cycling tourism and public transport makes it possible for cyclists to experience Switzerland from the pleasant side. The routes can always be travelled downhill and the unattractive stretches can be omitted. In addition, this optimum link allows cyclists to shorten their cycling tour at will, discontinue it or resume it elsewhere either because the weather has worsened or because one has overestimated one's own condition. In this sense, the "Cycling Timetable" is a kind of "Insurance" for cycling tourists.

WERE THE OBJECTIVES ACHIEVED?

The question arises whether the objectives mentioned at the beginning (high utilisation of public transport to tackle gradients, to bridge dangerous stretches, as well as for the journey there and back) were also achieved. A couple of indicators give sufficient information that the objectives were indeed achieved.

The SBB keeps statistics on the sales of cycle transport tickets (number and turnover). Approx. 5 to 10% more cycle transport tickets were sold in 1998 by comparison with 1997, and the growth in turnover amounted to approx. 5%. An analysis by months shows that the 1998 season began exceptionally well, that the autumn, however, ended below average on account of extremely bad weather conditions. The "Cycling Timetable" was published with a print run of 215,000 copies and appeared at the end of May 1998. After a short period of just 3 months after appearance, this was already no longer available at some stations. In comparison with the development in passenger traffic, this growth is above average. "One might think that cycling had been newly invented in 1998", observed Ueli Senn, the then head of the SBB service section, at a conference in November 1998.

A survey which was conducted among cycle tourists on the national routes in September 1998 shows which means of transport were used for the journey there and back. When travelling to a longer cycle tour (with more than two overnight stays), rail is used in more than half of all cases. The car is chosen as the means of transport in 20% of the cases (the values are similar for the return journey). In international comparison, this rail ratio is above-average high and exceeds our own expectations. The use of rail, bus or ship is not only astonishingly high for the journey to the start and back, but also en route.

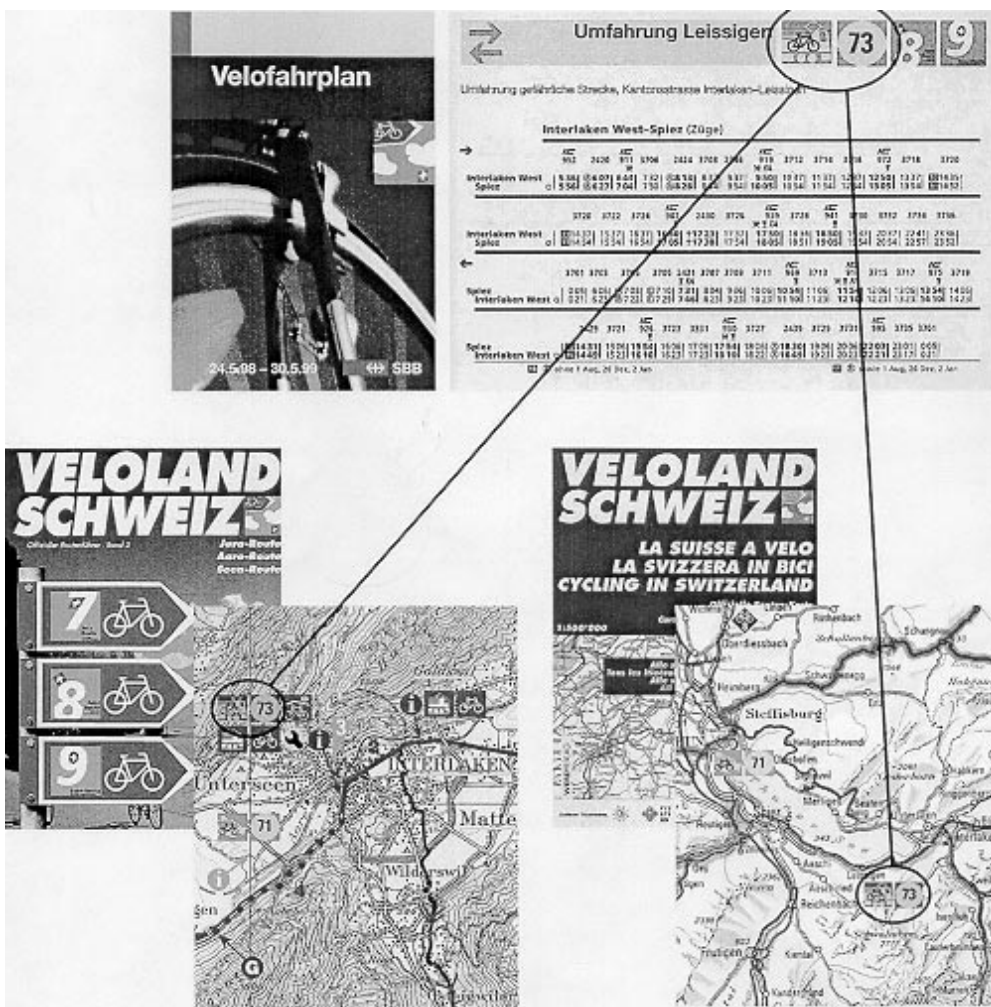
33% of cyclists en route for more than three days state that they had used rail at least once en route. 5% used the bus at least once en route (excluding the journey to the start and back; there are no details available for ships). According to the survey, the cyclists are quite satisfied with the offer.

THE FUTURE: IMPROVEMENT IN THE QUALITY OF THE OFFER.

It is the firm intention of the project management to raise the quality of the offer in "Cycling in Switzerland". For this reason, a "quality programme" has been started which registers existing shortcomings and takes the necessary steps to remedy these shortcomings. As mentioned above, it was not possible to travel round or improve all the dangerous stretches on the national routes. The recommendation to cycle tourists to bridge these dangerous stretches by rail, bus or ship is a substitute solution. Because it prevents the real purpose, namely cycling. Therefore, in future dangerous stretches are to be travelled round or improved. The SBB and the private railways, bus and shipping companies will also improve their offer. From 1.1.1999, the railways have further simplified and reduced the fares for self loading of cycles, and on short stretches customers loyal to the railways will be rewarded in that Half Fare Cards, the General Abonnement and Family Cards will be valid. On the other hand, international cycle transport with public transport for tourists which travel to Switzerland from abroad has still not been adequately resolved. The project management is supporting improvements within the limits of its possibilities, and is already looking forward to being able to offer an even more attractive "Cycling in Switzerland" in future.

Figure 1:

Link between "Cycling in Switzerland" and public transport: numbered pictograms in the "Cycling timetable", in the route guides and in the general map.



100 BICYCLE STATIONS IN NRW

Georg Hundt

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The ADFC is the lobby of cyclists in Germany. Mr. Hundt works in this organization since 1987. Other projects include the development of a network of cycle paths and touristic services in North Rhine-Westphalia.



100 BICYCLE STATIONS IN NRW

The government of North Rhine-Westphalia worked out the programme to establish a network of bicycle stations at railway stations in NRW. It is executed by the ADFC-Entwicklungsagentur für Fahrradstationen. This agency works together with several ministries, the Germany railway, the employment administration, the chambers of crafts, municipalities, and the operators of the bicycle stations in NRW. Bicycle stations provide the main functions: parking and protection of bicycles, bicycle service, bicycle renting. Bicycle stations improve station buildings, offer additional services, and social control. They offer jobs and perspectives for unemployed persons. The agency consults during the planning, building and operation process: estimation of the potential demand, location, architecture, rack system, operational concept, marketing. Therefore it developed a brand concept "Radstation" which includes a design concept.

TITEL PROGRAMM "100 FAHRRADSTATIONEN IN NRW"

Die Regierung des Landes Nordrhein-Westfalen hat das Programm ausgearbeitet, um ein Netz von Fahrradstationen an Bahnhöfen in NRW aufzubauen. Es wird von der ADFC-Entwicklungsagentur für Fahrradstationen umgesetzt. Die Agentur arbeitet mit verschiedenen Ministerien, der Deutschen Bahn AG, der Arbeitsverwaltung, den Handwerkskammern, den Kommunen und Betreibern von Fahrradstationen in NRW zusammen. Die Kernfunktionen von Fahrradstationen sind sicheres und witterungsgeschütztes Abstellen von Fahrrädern, Fahrradservice und -vermietung. Fahrradstationenwerten Bahnhöfe auf, erweitern das Dienstleistungsangebot und machen Bahnhöfe sicherer. Sie bieten Arbeitslosen eine berufliche Perspektive. Die Agentur berät während der gesamten Planung, dem Bau und Betrieb von Fahrradstationen: Potentialschätzung, Standortwahl, architektonische Umsetzung, Ständersystem, Betriebskonzept, Marketing. Dafür entwickelte sie das Marken- und Gestaltungskonzept "Radstation".

PROGRAM "KOLESARSKIH POSTAJ V SEVERNORENSKI VESTFALIJA"

Vlada severnorenske Vestfalije je izdelala program za ustanovitev mreže kolesarskih postaj na železniških postajah v SRV. Izvaja ga ADFC (Entwicklungsagentur für Fahrradstationen). Agencija deluje z več ministrstvi, nemško železniško družbo, zavodom za zaposlovanje, obrtno zbornico, mestnimi oblastmi ter operaterji kolesarskih postaj v SRV. Kolesarske postaje opravljajo osnovne dejavnosti: parkiranje in zaščita koles, servisiranje koles, izposoja koles. Kolesarske postaje izboljšujejo postajne stavbe, ponujajo dodatne usluge in družbeno kontrolo. Ponujajo službe in perspektive za nezaposlene. Agencija nudi posvete med načrtovanjem, gradnjo in delovnim procesom: ocenitev potencialnih zahtev, lokacija, arhitektura, sistem stojal, operacijski koncept, marketing. Torej je razvila koncept "kolesarske postaje", ki vključuje tudi oblikovni koncept.

PROGRAMM „100 FAHRRADSTATIONEN IN NRW“

ALLGEMEINE RAHMENBEDINGUNGEN

Die Bedeutung des Radverkehrs für die Verbesserung kommunaler Verkehrsverhältnisse ist trotz aller Restriktionen öffentlicher Finanzen weitgehend unumstritten. Da es sich bei der Gestaltung des Radverkehrs in den Städten und Gemeinden allerdings nach landläufiger Meinung um eine freiwillige kommunale Leistung handelt, stehen inzwischen viele Investitionsentscheidungen zur Förderung des Radverkehrs unter dem Diktat leerer Kassen. Dieser Zusammenhang ist besonders beim Thema „Fahrradstationen“ wirksam: Fahrradstationen sind in Deutschland noch kein selbstverständlicher Bestandteil eines kommunalen Radverkehrssystems. Auch für sie gilt das grundlegende Planungskriterium der Angebotsplanung: Nur ein gutes Angebot schafft eine nachhaltige Nachfrage. Und wie bei Dienstleistungen allgemein gilt auch für die speziellen Dienstleistungen in Fahrradstationen, auf die im weiteren noch eingegangen wird, daß ein gutes Marketing und eine intensive Öffentlichkeitsarbeit der Schlüssel zum Erfolg sind.

Warum gutes Marketing und intensive Öffentlichkeitsarbeit bei Fahrradstationen bereits in der Planungsphase und den politischen Entscheidungsprozessen unabdingbar sind, wird vor allem an folgendem deutlich: Wenn selbst viele kommunale Verkehrsplaner beim Thema „Fahrradstationen“ häufig zu den ersten Bedenkensträgern gehören, kann man sich gut vorstellen, wie die Entscheidungen bei den Stadtkämmerern, wenn es um die kommunalen Finanzanteile geht, zunächst aussehen. Für eine Entscheidung zugunsten der Fahrradstation muß daher administrativ und politisch der Boden gut vorbereitet werden.

Dabei haben die Fahrradstationen wie bei allen anderen Investitionsentscheidungen für den Radverkehr auch die finanziellen Argumente auf ihrer Seite. Während die Kosten für einen PKW-Stellplatz in zentraler Lage wie an Bahnhöfen in der Regel eine Größenordnung von DM 30.000,- leicht überschreiten, ist für 10% der Summe schon ein komfortabler Stellplatz in einer Fahrradstation herzustellen. Hinzu kommen die wesentlich geringeren Flächenanforderungen und, sofern es sich um Flächen in vorhandenen Bahnhofsgebäuden handelt, ein begrüßenswertes Flächenrecycling. Dennoch fällt es offensichtlich auch in Zeiten leerer kommunalen Kassen manchem Stadtkämmerer leichter, Millionen für Parkhausbauten für den Kfz-Verkehr locker zu machen als einige hunderttausend DM für eine nachhaltige Verbesserung der Abstellqualität für Fahrräder.

Dabei hat die Bedeutung des Fahrrads als Kombinationsverkehrsmittel zum schienengebundenen Nah- und Fernverkehr in den vergangenen Jahren in Nordrhein-Westfalen (NRW) stetig zugenommen. Selbst an Bahnhöfen, an denen vor 10 Jahren keine nennenswerte Anzahl von abgestellten Fahrrädern gezählt wurde, ergeben sich heute Abstellprobleme bei Fahrrädern, weil eine ausreichende Anzahl von Fahrradabstellanlagen oder Freiflächen nicht vorhanden ist.

Auch die allgemeine Nutzung des Fahrrads als Verkehrsmittel wird weiterhin steigen. Bis zum Jahr 2000 ist von einer Zunahme des Radverkehrs in einer Größenordnung von 10% zu rechnen. Begünstigt wird der Trend wegen der weiterhin großen Verkehrsprobleme durch den motorisierten Individualverkehr in den Städten, ein gestiegenes Umwelt- und Gesundheitsbewußtsein der Bevölkerung und ein geändertes Freizeitverhalten.

FAHRRADDIEBSTAHL UND VANDALISMUS ALS NUTZUNGSBARRIEREN

Mit Zunahme des Bike&Ride-Verkehrs steigt an Bahnhöfen die Diebstahl- oder Vandalismusgefahr für abgestellte Fahrräder. Für potentielle Nutzer und Nutzerinnen ist ein wirksamer Schutz der abgestellten Fahrräder das wichtigste Argument für das Fahrrad als Kombinationsverkehrsmittel. Eine wachsende Zahl ungeordnet abgestellter Fahrräder an Bahnhöfen ist zwar verkehrspolitisch zu begrüßen, fördert aber nicht gerade das städtebauliche Umfeld.

Mit Fahrradstationen soll durch die angebotene Bewachung gegen Entgelt dem Fahrraddiebstahl oder Vandalismus an Fahrrädern wirksam entgegengetreten werden. Durch das geordnete Abstellen der Fahrräder in einem Gebäude können die städtebaulichen Probleme entschärft werden. Durch weitere Dienstleistungen wie Fahrradservice und -reparaturen, Fahrradvermietung oder Kurierdienste, aber auch bahnhofsbezogene Hausmeistertätigkeiten und sonstige Mobilitätsdienstleistungen können Fahrradstationen zur Bahnhofsentwicklung beitragen.

Das Konzept „Fahrradstationen“ stammt aus den Niederlanden, wo ein erheblicher Anteil der Bahnreisenden das

Fahrrad auf dem Weg vom und zum Bahnhof nutzt. An rund 80 Bahnhöfen in den Niederlanden gibt es Fahrradstationen mit einer Mindestanzahl von 1.000 Stellplätzen. Ca. 50% der Bahnreisenden in den Niederlanden erreichen den Bahnhof per Fahrrad, davon stellen wiederum 50% das Fahrrad in einer Fahrradstation ab.

Solche Verhältnisse sind in NRW zunächst nur an wenigen Standorten gegeben: In Münster wird im Juni 1999 eine Fahrradstation als Tiefgarage mit einer Kapazität von 3.000 Stellplätzen in Betrieb gehen, an weiteren Bahnhöfen des Münsterlandes wie Rheine oder Emsdetten sind Kapazitäten von rund 1.000 Stellplätzen geplant. Das gilt voraussichtlich auch für den Hauptbahnhof in Köln. Mit dem Landesprogramm „100 Fahrradstationen in NRW“ eröffnet sich für die Kommunen in NRW aber die grundsätzliche Perspektive, Fahrradstationen der Verkehrsentwicklung des Bike&Ride-Verkehrs entsprechend zu entwickeln und langfristig „holländische“ Verhältnisse zu erreichen.

FÖRDERPROGRAMM „100 FAHRRADSTATIONEN IN NRW“

Im Rahmen der Koalitionsvereinbarung der Regierungsparteien SPD und BÜNDNIS 90/DIE GRÜNEN ist für das Land NRW die Ausweitung des Umweltverbundes von Fahrrad und Bahn durch das Landesprogramm „100 Fahrradstationen in NRW“ festgelegt worden. Durch die für den Verkehr und den Arbeitsmarkt zuständigen Ministerien des Landes NRW ist zur Umsetzung des Programms eine besondere Landesförderung vorgesehen. Danach wird pro Stellplatz, der in Fahrradstationen angeboten wird, eine förderfähige Höchstgrenze von DM 3.000,- anerkannt, für die Städte und Gemeinden bis zu 90% an Landeszuschüssen erhalten können. Die Mindestausstattung an Stellplätzen in Fahrradstationen muß 100 Stellplätze betragen.

Mit diesem Finanzierungsangebot durch das Land NRW dürfte es auch den unter erheblichen Haushaltsproblemen leidenden Kommunen in NRW gelingen, mit einem vergleichsweise bescheidenen eigenen Finanzbeitrag zu einer erheblichen Verbesserung des Umweltverbundes von Fahrrad und Bahn zu kommen.

RAHMENVEREINBARUNG ZWISCHEN DEUTSCHER BAHN AG UND LAND NRW

Fahrradstationen konnten auch in der Vergangenheit schon mit unterstützender Landesförderung an Bahnhöfen gebaut werden. Allerdings waren die Verhandlungen mit der ehemaligen Deutschen Bundesbahn über die erforderlichen Flächen in Bahnsteignähe oft langwierig und häufig nicht von Erfolg gekrönt. Nach der Privatisierung der Deutschen Bundesbahn in die Deutsche Bahn AG (DB AG) gestaltete sich dies einfacher.

Um die Umsetzung des Programms „100 Fahrradstationen in NRW“ zu beschleunigen, hat das Land NRW mit der Deutschen Bahn AG eine Rahmenvereinbarung abgeschlossen. Durch die Vereinbarung verpflichtet sich die DB AG, für die Errichtung von Fahrradstationen Gebäude, Gebäudeteile oder Freiflächen, die sie selbst nicht mehr benötigt, unentgeltlich über einen Zeitraum von 10 Jahren zur Verfügung zu stellen. Mit dieser Regelung hat die DB AG anerkannt, daß das Fahrrad in Zukunft an vielen Bahnhöfen in NRW ein wichtiges Kombinationsverkehrsmittel sein wird, das auch sie fördern will.

Bestandteil der Rahmenvereinbarung ist ebenfalls ein Mietvertrag als Grundlage für eine vertragliche Regelung zwischen der Kommune und der DB AG für den einzelnen Standort. Der Mietvertrag enthält die vor Ort zu regelnden Einzelheiten und sollte damit erheblich zu einer konstruktiven Lösung diverser ortsspezifischer Problemstellungen beitragen.

Aus der Erfahrung zahlreicher Beratungsgespräche an inzwischen mehr als 80 Standorten, an denen in NRW inzwischen die Einrichtung einer Fahrradstation geprüft oder geplant wird, kann der ADFC feststellen, daß die DB AG Buchstaben und Geist des Rahmenvertrages mit Leben füllt. Seit Abschluß des Rahmenvereinbarung ist die Einrichtung einer Fahrradstation nicht mehr an der DB AG gescheitert.

Bei der Errichtung von Fahrradstationen stellen sich für die Kommunen Fragen einer angemessenen baulichen und verkehrlichen Lösung im Rahmen von gegebenen Verhältnissen in oder an DB-Gebäuden. Weiterhin ist zu klären, wie Betreiber für die Fahrradstationen gefunden werden und welche Dienstleistungsangebote über die Kernfunktionen Bewachung, Fahrradservice und Fahrradvermietung hinaus zu einer möglichst hohen wirtschaftlichen Eigenständigkeit führen.

ENTWICKLUNGSAGENTUR FÜR FAHRRADSTATIONEN

Um diese Planungsfragen standortbezogen zu lösen, fehlt den Kommunen häufig ein entsprechender Erfahrungshintergrund. Das Land NRW hat deshalb den Allgemeinen Deutschen Fahrrad-Club, Landesverband NRW e.V. im Jahr 1996 beauftragt, im Rahmen einer

Entwicklungsagentur für Fahrradstationen interessierte Kommunen und/oder Betreiber bei der Realisierung von Fahrradstationen zu beraten. Sie können die Beratungsleistungen unentgeltlich in Anspruch nehmen. Im Rahmen der Beratungen vor Ort ermittelt die Entwicklungsagentur mögliche Dienstleistungs- und Betreiberkonzepte, die den Kommunen und Betreibern bei der Vorbereitung von Förderanträgen oder der Entwicklung von baulichen Lösungen Entscheidungshilfen geben. Die Beratungsleistungen der Agentur beinhalten die optimale Standortwahl, eine funktionale und gestalterisch ansprechende Architektur unter Berücksichtigung der erforderlichen Kapazitäten, die richtige Ständerwahl, das Betriebssystem, die Auswahl des Betreibers sowie Marketing und Öffentlichkeitsarbeit. Durch die Beratung durch die Agentur können die kommunalen Planungsprozesse erheblich verkürzt und Planungskapazitäten auf ein vernünftiges Maß reduziert werden.

Damit wird sichergestellt, daß für die grundsätzlichen Entscheidungen bei der Errichtung der Fahrradstationen kurze Entscheidungsprozesse bei der Vielzahl der Beteiligten möglich gemacht werden und die Entscheidungsgrundlagen für die erforderlichen Anträge für die Landesförderung möglichst zeitnah hergestellt werden.

In Zukunft wird die Agentur ihre Beratung stärker auf die eröffneten oder kurz vor der Eröffnung stehenden Fahrradstationen ausrichten. Dadurch ergeben sich neue Schwerpunkte für die künftige Arbeit: Mit dem sich entwickelnden Netz von Fahrradstationen entsteht ein Netzwerk von Betreibern. Die Agentur koordiniert dieses Netzwerk und bringt übergreifende betriebliche Lösungen voran.

MARKENKONZEPT „RADSTATIONEN“

Neben der Beratung der Kommunen beim kommunalen Planungsprozess und der Betreiber in betrieblichen Fragen hat die Entwicklungsagentur einen weiteren Beratungsauftrag: Die Dienstleistungen in den Fahrradstationen sollen möglichst nach einem einheitlichen Dienstleistungskonzept in NRW angeboten werden. Die Entwicklungsagentur hat für die Gestaltung von Fahrradstationen sowie für das Marketing ein Gesamtkonzept entwickelt. Die Kernangebote der Fahrradstationen sind in NRW zur Marke „Radstation“ weiterentwickelt worden. Das Gestaltungskonzept beinhaltet Logo und Piktogramme, die auf Schildern, Werbemitteln etc. eingesetzt werden. Das Markenkonzert ist als Gebrauchsmuster beim Deutschen Patentamt in München anerkannt worden. Es wird den Betreibern ebenfalls unentgeltlich zur Verfügung gestellt, wenn sie sich bereit erklären, bestimmte Mindeststandards dauerhaft einzuhalten.

Diese Vereinheitlichung der Standards hat auch noch einen wichtigen Nebenaspekt: Durch eine möglichst flächendeckende Etablierung einheitlicher Dienstleistungen in Fahrradstationen entsteht eine neue Qualität des Umweltverbundes in NRW, die zu weiterer Verkehrsnachfrage und Kundenbindung führt.

Betreiberkonzepte

Eine weitere entscheidende Frage für die Errichtung von Fahrradstationen ist, wie sie langfristig rentabel betrieben und ihr Betrieb dauerhaft sichergestellt werden kann. Wegen der Bindungsfrist von 10 Jahren ist der dauerhafte Betrieb für die Kommunen ein wichtiges Entscheidungskriterium.

Um den dauerhaften Betrieb von Fahrradstationen sicherzustellen, haben sich in NRW zwei Betreibermodelle entwickelt: Kommunale oder gemeinnützige Beschäftigungsträger sehen im Betrieb von Fahrradstationen eine Möglichkeit, Langzeitarbeitslosen im Rahmen von öffentlichen Arbeitsmarktprogrammen Beschäftigungsmöglichkeiten zu erschließen. Das Betreiberkonzept ist weitgehend abhängig von den Rahmenbedingungen dieser Arbeitsmarktprogramme, wie z.B. den Unwägbarkeiten der Finanzausstattung bei den öffentlichen Förderinstrumenten.

Um diese Unwägbarkeiten zu verringern, aber auch um den Betreibern einen Weg in die wirtschaftliche Eigenständigkeit zu eröffnen, verfolgt die Entwicklungsagentur an geeigneten Standorten private Lösungen. Vor allem arbeitslose Zweiradmechanikermeister werden mit Existenzgründungskonzepten unterstützt. Diese Konzepte können an vielen Standorten in NRW realisiert werden und bieten damit den Kommunen Alternativen zu gemeinnützigen Beschäftigungsträgern.

VORLÄUFIGES FAZIT

Mit dem Förderprogramm „100 Fahrradstationen in NRW“ werden die Belange des Umweltverbundes von Radverkehr und schienengebundenem Verkehr auch bei der Finanzierung besonders berücksichtigt. Das zuständige Ministerium

finanziert die Investitionskosten in erheblichem Umfang. Über die Arbeitsmarkt- und Qualifizierungsprogramme der öffentlichen Arbeitsverwaltung können standortbezogene Betreiberkonzepte entwickelt, das Betreiberrisiko erheblich reduziert und mittelfristig eine hohe Eigenwirtschaftlichkeit gesichert werden. Durch das Beratungsangebot der Entwicklungsagentur ist nach der Klärung der wichtigsten konzeptionellen Fragen die Realisierung von Fahrradstationen in relativ kurzen Planungsphasen möglich. Dadurch werden die Kommunen beim Planungsaufwand entlastet. Auch der Abstimmungsaufwand zwischen den an der Planung Beteiligten kann durch Hinzuziehung der Entwicklungsagentur erheblich verringert werden.

Den Kommunen ist in Zeiten knapper Kassen durch das Förderprogramm „100 Fahrradstationen in NRW“ ein erheblicher Handlungsspielraum gegeben. Der Erfolg des Programms mit mehr als 80 Standorten, an denen Fahrradstationen in NRW geplant werden, hat sich bereits nach einer kurzen Anlaufphase eingestellt. Bis zum Ende des Jahres 1998 haben 9 Radstationen ihren Betrieb aufgenommen, in diesem Jahr werden weitere 15 bis 20 hinzukommen. Die programmatische Aussage „100 Fahrradstationen in NRW“ ist deshalb keine Utopie mehr.

FACILITY DESIGN STANDARDS & GUIDELINES - ARE THEY KEEPING UP?

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FACILITY DESIGN STANDARDS & GUIDELINES - ARE THEY KEEPING UP? -

Bicycle use, as an acceptable and recognised mode of transport is increasing in new-world countries such as Australia. The bicycle was little thought of in Australia's development of infrastructure in support of the motor car. Cycling is also being integrated with buses and trains as multi-modal transport alternatives to the motor car. The mix of pedestrians, cyclists and other road users is increasing. It is thus imperative that each category of user is safe and supported by appropriately designed and constructed facilities. The design standards and guidelines that are necessary to support the harmonious co-existence of these users have seemingly not kept pace with their motorised transport equivalents. This paper addresses these needs and relates the current Australian position and experiences of the author.

STANDARDS UND RICHTLINIEN FÜR DIE KONZIPIERUNG VON VERKEHRSEINRICHTUNGEN. ERFÜLLEN SIE IHRE AUFGABE?

Der Gebrauch des Fahrrads als akzeptables und anerkanntes Verkehrsmittel nimmt in den Ländern der Neuen Welt, z.B. in Australien, zu. Im Rahmen der Infrastrukturentwicklung für den motorisierten Verkehr in Australien wurde dem Fahrrad nur wenig Aufmerksamkeit gewidmet. Außerdem wird das Fahrrad mit dem Bus- und dem Schienenverkehr zu einer multimodalen Alternative zum PKW zusammengefaßt. Die Verkehrsflächen werden zunehmend von Fußgängern, Radfahrern und anderen Verkehrsteilnehmern gemeinsam benutzt. Deshalb müssen wir dafür sorgen, daß die Sicherheit jeder dieser Benutzergruppen gewährleistet ist und ihnen angemessen konzipierte und konstruierte Verkehrseinrichtungen zur Verfügung stehen. Die Planungsstandards und Richtlinien, die erforderlich sind, um eine harmonische Koexistenz dieser Benutzergruppen zu gewährleisten, haben anscheinend mit ihren jeweiligen, für den motorisierten Verkehr erlassenen Pendanten nicht Schritt gehalten. Dieses Referat befaßt sich mit den entsprechenden

Notwendigkeiten und vermittelt einen Eindruck von der gegenwärtigen Situation in Australien sowie von den Erfahrungen des Autors.

OBLIKOVNI STANDARDI OPREME IN VODILA - ALI NE ZAOSTAJAO?

Uporaba kolesa kot sprejetega in priznanega načina prevoza narašča v državah novega sveta, kot je Avstralija. Pri urejanju infrastrukture v Avstraliji ni bilo veliko pozornosti namenjene kolesu kot spremljevalcu avtomobila. Kolesarjenje je inegrirano z avtobusi in vlaki kot multimodalna alternativa avtomobilom. Mešanica pešcev, kolesarjev in drugih uporabnikov cestišč narašča. Zato je nujno potrebno, da je vsaka od teh kategorij varna in podprta z ustrezno oblikovanimi in postavljenimi sredstvi. Oblikovni standardi in vodila, ki so potrebni za harmoničen soobstoj the uporabnikov se očitno niso razvijali vzporedno z motoriziranimi sredstvi. Referat naslavlja te potrebe in predstavlja trenutno situacijo v Avstraliji in izkušnje avtorja.

FACILITY DESIGN STANDARDS & GUIDELINES - ARE THEY KEEPING UP?

INTRODUCTION

Amongst many outcomes, the revolution that has taken place in communication technology has led to both instantaneous promulgation and speedier access to global knowledge and information. Today we are as aware of what is happening on the other side of the world as we are of those happenings in our own community. This readily accessible knowledge base and the ability to quantify happenings into a global context have led to some truly international concerns. Foremost amongst such concerns is that of environmental pollution and we are all, no doubt, familiar with the terms greenhouse effect and global warming. Acknowledgment of the environmental issue, and more importantly acceptance of its' responsibility and ownership, was recognised by the world's nations at the 1992 Rio Earth Summit through Agenda 21 of the Climate Change Convention and at the 1997 Japan Global Warming Conference through the Kyoto Protocol. What led to this recognition?

As seen in Table 1, the concentration of global atmospheric carbon dioxide was at a consistent level of approximately 280 parts per million up until the nineteenth century. From the mid-1980's, the level slowly began to increase. What happened to cause the change? In simplistic terms - the Industrial Revolution. Moreover, what has happened since? The rate of increase has now approached that of an exponential rise.

Table 1. Global CO₂

Year	Level
1700	280 parts per million
1750	280 ----- ppm -----
1800	280 ----- ppm -----
1850	285 ----- ppm -----
1900	295 ----- ppm -----
1950	315 ----- ppm -----
2000	360 ----- ppm -----

Table 2. Global Population

Year	Elapsed Years	Population
1700	40,000	1 Billion.
1750	100	2 Billion.
1800	30	3 Billion.
1850	15	4 Billion.
1900	12	5 Billion.
1950	12	6 Billion.
2000	50	10/12 Billion.

It is also significant that, as seen in Table 2, the world's population has increased by one billion approximately every 12 years since 1975. As such, global population is forecast to double by the year 2050. The impact of such a population growth on the global health of our environment, if uncontrolled, will be of far greater significance than the concerns we share today.

The local and global health of our environment impinges upon the quality of life of every individual. It is equally a direct result of the combined impacts of the activities of every community member. One major threat to environmental health is the combined effects of the exhaust gas emissions of motor vehicles.

AUSTRALIA'S MOTORISED TRANSPORT DEVELOPMENT

The centuries of pre-motorised transport evolution that took place in Europe did not occur in Australia. When the internal combustion engine was invented, approximately 100 years ago, Australia's settlement history barely spanned 100 years. Consequently, the significant development and manufacture of motorised transport occurred in parallel with Australia's social development. The provision of road networks responded to the needs of the relatively small vehicle numbers owned by the infant Australia population, of which, not everyone at that time could afford to own a motor vehicle.

Motorised transport, however, particularly suited the tremendous distances covered by the early settlers as they travelled throughout the vastness of the Australian continent. As the social structure of the country settled and developed, and the richness of its resources generated a comparatively high standard of living in global terms, it did so in parallel with the adoption and expansion of motorised traffic. As individual wealth increased, so too did vehicle numbers and the road network expanded accordingly. Unfortunately, the bicycle was little thought of as the infrastructure in support of the motor car developed and took an increasing hold on Australian society.

Today, in the face of competing community demands for land and space, particularly in cities and metropolitan regions, expansion of road infrastructure is reaching its' limitations. This has led to saturation and congestion, and at a cost. Congestion and air pollution now cost 4% of Australia's Gross Domestic Product (A\$100 billion in 1998). Congestion costs A\$100 million/week in lost time/productivity and every Australian family, on average, pays an extra A\$1,000 pa for goods and services.

The 1995 Australian National Greenhouse Gas Inventory reported transport to be responsible for 14.4% of the net greenhouse gas emissions in Australia. Cars were identified as being the largest single contributor, responsible for 57% of domestic transport greenhouse gas emissions. National transport emissions grew by 11.7% from 1990-95, the fastest growth of any sector. Air pollution causes 2,000,000 Australians to suffer from asthma or other air quality related disabilities. Australia's 1998 National Greenhouse Strategy encourages greater use of public transport, walking and cycling as one of a suite of measures aimed at limiting greenhouse gas emissions whilst at the same time, improving air quality and reducing traffic congestion.

Equally importantly, motorised transport has led to accidents, injuries and fatalities at some significant cost to the community. Road trauma costs Australia's 18 million people over A\$6 billion a year. Road crashes hospitalised over 20,000 people in 1997/98. Road crashes permanently incapacitate or disable over 3,000 people each year. Road deaths of 1,765 in 1997/98 cost the Australian community A\$1.2 billion. Road crashes cause the most deaths of Australians aged between 6 and 28.

AUSTRALIA'S BICYCLE TRANSPORT DEVELOPMENT

Over the past twenty years, through the efforts of cycling supporters, the bicycle has gained increasing recognition as an economic, environmentally friendly, sustainable, healthy and popular mode of transport. In addition, its' potential in generating significant socio-economic benefits is also being recognised as the cost to society of motorised transport and physically inactive lifestyles are quantified. In support of the adoption of cycling, the bicycle is being integrated with buses and trains as a multi-modal public transport alternative to the motor car.

Most of Australia's States and Territories have now developed cycling strategies and plans that are currently being implemented. The 1993 National Bicycle Strategy has now been updated and the revision endorsed by the Australia Transport Council (consisting of the Ministers of Transport of each State/Territory). Australia Cycling - The National Strategy 1999-2004 was publicly launched in February of this year.

Also of significance at this time is the development of national road traffic legislation. Currently each of Australia's States and Territories has maintained its' own road rules. It is now hoped to achieve national uniformity through the adoption of common legislation within the next twelve months.

Of some significance in this development has been the introduction of a dedicated bicycle-only facility and, in addition, the redefining of the term pedestrian. This definition has now been broadened to include conveyances for the disabled, roller boarders, roller skaters and roller bladers. In the context of the title of this section of the paper, this has relevance, as many facilities used by cyclists are shared with pedestrians. In addition, the mix of cyclists and cycling facilities with pedestrians and pedestrian facilities is also increasing. As the intention is to increase both pedestrian and cycling related activities, in preference to trips by motor vehicle, it is imperative that each category of user is safe and supported by appropriately designed and constructed

facilities. As facility owner, Local Government is becoming increasingly nervous of its liability in the event of user conflicts and the issue is of particular interest to its members.

AUSTRALIA'S ROAD TRANSPORT DEVELOPMENT

Austroroads is the national association of road transport and traffic authorities in Australia. The mission of Austroroads is to pursue the effective management and safe use of the nation's roads:

- > as part of the Australian Transport System; and
- > by the development and promotion of national practices.

Austroroads also provides professional advice and supports ministerial councils and national bodies. The membership of Austroroads consists of representatives of each State/Territory. All national road related projects are delivered through five Austroroads program areas, which are:

- > Road Use Management;
- > Road System Management;
- > Technology and Environment;
- > Business Systems; and
- > Road Safety.

(As an example, the recent review of the 1993 National Bicycle Strategy to produce Australia Cycling - The National Strategy 1999-2004 was undertaken as an Austroroads Road Use Management program.)

Austroroads has historically worked towards uniformity of practice in respect of design, construction and user aspects of roads and bridges and with this in view, publishes guides and general procedures. The development of the Austroroads Guide to Traffic Engineering Practice has now produced the 14 Parts listed in Table 3:

Table 3. The Austroroads Guide to Traffic Engineering Practice Series:

1. Traffic Flow	6. Roundabouts	11. Parking
2. Roadway Capacity	7. Traffic Signals	12. Roadway Lighting
3. Traffic Studies	8. Traffic Control Devices	13. Pedestrians
4. Road Crashes	9. Arterial Road Management	14. Bicycles
5. Intersections at Grade	10. Local Area Traffic Management	

The Traffic Engineering Practice series is a practical guide to traffic engineering for highway and transport engineers in road authorities, local government, engineering and planning consultants, and as a reference for engineering students. The final Part, Austroroads Guide to Traffic Engineering Practice - Part 14 Bicycles was revised during 1998. It will be ready for publication by Austroroads in 1999.

In 1997 the Australian Transport Council (ATC) endorsed its revised Strategic Plan giving primary responsibility for the implementation of its work to the Standing Committee on Transport (SCOT) through four sub-modal groups: Air, Sea, Rail and Road. Austroroads has been designated the Road sub-modal group.

AUSTRALIA'S TRANSPORT DEVELOPMENT DILEMMA

In Australia today, transport is being re-defined as the conveyancing of people and goods. This should neither be regarded as flippant nor factitious, as it is a popularly held view that the transport developments that have taken place to date have responded primarily to the needs of the conveyance - not that which it conveyed. Austroroads, the nation's association of road transport and traffic authorities, has assumed this primary responsibility for meeting the needs of the conveyance - the motor vehicle. This being so, then one would have to question the approach taken, for example, in deciding the content of each Part of the Austroroads Guide to Traffic Engineering Practice. Why? Because past Austroroads expert panels, consisting of a majority of road transport and traffic authority employees, have opinions based primarily on the behaviours and practices of motor vehicle drivers. Today, such panels would not be regarded as adequately representative of the issues of all other road users. Sufficient evidence now exists to confirm that to be really au fait with bicycle or pedestrian issues, in the context of road network design and construction, it is equally important to have input from

expert cyclists and expert pedestrians.

Why is this important? It is important because those who design and construct facilities do so in compliance with such guidelines. Thereafter, those who subsequently own such facilities carry the duty of care and bear the responsibility for all users. Each player in the process expects the facility to meet the needs of all users not primarily those of a select group. Can we therefore honestly say that each of the above publications truly meets the needs of all users? Probably not, as some of these publications are old in the sense that they pre-date the recognition now given to those all-user needs. It is also important to afford equal priority to the requirements of such users - no matter what their numbers. Only in this way can it be said that a balanced (or integrated) transport system is truly being provided.

In presenting these points of view, it should also be stated that what has happened is not as a result of the dynamics of change of the transport industry. Whilst there has been change at a global level, both socially and politically, the evidence overwhelmingly reminds us that since the industrial revolution we have gone about it the wrong way. The challenge is to put right what we can and then ensure that the mistakes are not repeated. We are all part of the problem and as such, we are all part of the solution. Even within this framework, however, transport dynamics will inevitably take place demanding a response. An Australian example of such an event would be the imminent introduction of the national Australian Road Rules.

The new Australian Road Rules significantly broaden the definition of pedestrian. Furthermore, in recognition of this broadened definition, the term dual-use path has been removed and replaced with the term shared path. Does this mean that we simply now call a dual-use path a shared path? I think not. If we recall, the Austroads Guide to Traffic Engineering Practice - Part 14 Bicycles and also Part 13 Pedestrians were produced to meet the requirements of cyclists and pedestrians. They were developed consistent with the definitions of cyclist and pedestrian at that time. Consequently, dual-use paths were constructed for use by both the then defined cyclist and pedestrian.

The additional users included in the re-defined term pedestrian are people on wheeled vehicles, viz disabled conveyances, roller boards, roller skates and roller blades. Their existence, motion and associated movements were not a consideration at the time of the development of either the Austroads Guide to Traffic Engineering Practice - Part 14 Bicycles or Part 13 Pedestrians. Add to this, as a component of global population expansion over the next fifty years, that the population of Australia will increase from its current 18 million to 25 million. Do not also forget that eg. Western Australia, in support of its' environmental concerns, intends doubling bicycle trips from the 1991 level of 5.7% to 11.5% and increasing the number of walking trips from 10% to 12.5% by 2029. Public transport is also being upgraded to provide a system that the public won't hesitate to use. The result -- more cyclists, more people on shared paths, more people on footpaths and more potential for user conflicts.

CONCLUSION

The historical development of road networks, their increasing congestion and ultimate saturation has led to the cyclist being intimidated from the road. As additional facilities for cyclists are provided, they are seldom for the use of cyclists alone. Cyclists will never be in a position to intimidate pedestrians from paths nor do they wish to be put in a position that makes it seem so. It is thus imperative that each category of user is recognised as an individual entity with unique requirements, all of which are equally important safety design criterion of all facility construction proposals.

As the numbers of users will inevitably increase, the design standards and guidelines that are necessary to support the harmonious and safe co-existence of all users must keep up. The need to provide sustainable, environmentally friendly and balanced (integrated) transport systems that are safe for all users is an ever increasing challenge but an essential and important requirement. To fail will again promote the motor vehicle as the panacea of transport.

CYCLING BY DESIGN - A DRAFT DESIGN STANDARD FOR CONSULTATION

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TUESDAY

ENGLISH

CYCLING BY DESIGN - A DRAFT DESIGN STANDARD FOR CONSULTATION

The Scottish Office is responsible for the administration of central government transport responsibilities in Scotland including the national road network. The Development Department's Transport and Planning Group sponsors two regular cycling meetings, the Policy Forum and the Technical Liaison Group. These are attended by representatives of all cycling development interests in Scotland.

The UK National Cycling Strategy includes a Key Strategic Output commitment to review and revise all design guidance. The Technical Liaison Group, with professional assistance from Scott Wilson Consultants, has taken forward this commitment. The resulting draft design standard, Cycling by Design draws upon local, national and international experience and is published as a working consultation document. The aim is to establish a comprehensive cycle design standard through application and feedback from practitioners and users. The draft document includes:

- Network Planning
- Design Guidelines
- Cycle Audit Procedures (for Trunk Roads)
- Legislative Framework

DEUTSCH

CYCLING BY DESIGN - ENTWURF EINES PLANUNGSSTANDARDS ZUR KONSULTATION

Das Scottish Office nimmt die Verantwortlichkeiten der zentralen Regierung in Bezug auf das Verkehrswesen in Schottland wahr. In seinen Kompetenzbereich fällt auch das nationale Straßennetz. Die Arbeitsgruppe für Verkehrswesen und Planung der Entwicklungsabteilung finanziert zwei regelmäßige Radfahrerzusammenkünfte, das Policy Forum und die Technical Liaison Group. Diesen gehören Vertreter all jener Gruppen an, die Interesse an der Entwicklung des Fahrradverkehrs in Schottland haben.

Die nationale Fahrradstrategie Großbritanniens (National Cycling Strategy) umfaßt als eine der primären Zielsetzungen die Verpflichtung zur Prüfung und Revision sämtlicher Planungsrichtlinien. Die Technical Liaison Group hat mit professioneller Unterstützung der Firma Scott Wilson Consultants diese Aufgabe übernommen. Der erarbeitete Entwurf für einen Planungsstandard, Cycling by Design, basiert auf lokaler, nationaler und internationaler Erfahrung und wird als Arbeitsdokument zu Konsultationszwecken veröffentlicht. Das Ziel besteht in der Erarbeitung eines umfassenden Planungsstandards für den Fahrradverkehr durch Anwendung und Feedback von Praktikern und Benutzern. Der Entwurf umfaßt:

- Netzplanung
- Planungsrichtlinien
- Prüfungsverfahren im Hinblick auf die Fahrradverträglichkeit (für Fernstraßen)
- Legislativer Rahmen

KOLESARJENJE PO NAČRTU - OSNUTEK OBLIKOVNEGA STANDARDA ZA KONZULTACIJO

The Scottish Office je služba, odgovorna za administracijo vladnih odgovornosti za transport na Škotskem, vključno z nacionalnim cestnim omrežjem. Skupina za transport in načrtovanje oddelka za razvoj sponzorira dve redni kolesarski srečanja, forum politike in skupino za tehnične povezave. Prisostvujejo jima predstavniki vseh interesov kolesarskega razvoja na Škotskem.

Angleška nacionalna kolesarska strategija vključuje zavezanost ključnemu strateškemu outputu za pregled in izboljšavo vseh oblikovnih napotkov. To zadolžitev je prevzela skupina za tehnične povezave, profesionalno pomoč pa jim nudijo s strani Scott Wilson Consultants. Iz tega izhajajoč osnutek oblikovnih standardov, imenovan "Cycling By Design", temelji na lokalnih, nacionalnih in mednarodnih izkušnjah in je izdan kot pomožni delovni dokument. Cilj je ugotoviti dodelan kolesarski oblikovni standard s pomočjo aplikacije in povratnih informacij od praktikov in uporabnikov. Dokument osnutka vsebuje:

- načrtovanje mreže
- oblikovni napotki
- revidirane kolesarske procedure (za avtoceste)
- zakonodajno ogrodje

CYCLING BY DESIGN - A DRAFT DESIGN STANDARD FOR CONSULTATION

In July 1996 the Department of Transport published the UK National Cycling Strategy. The Strategy promotes cycling priority on the highway, in the centre of towns, at the workplace and in new developments, and establishes national targets for doubling the level of cycling between 1996 and 2002, and doubling it again by 2012. In response to these targets The Scottish Office commissioned Scott Wilson Scotland Ltd to produce Cycling by Design. The prime objective of the commission was to rationalise existing cycling design guidelines into a single comprehensive, coherent reference document that may be used by designers and planners as a source of sound technical advice and implement the following National Cycling Strategy key outputs in Scotland:

- Output 5 - National Trunk Road Cycle Audit Procedures
- Output 6 - Design Guidelines
- Output 7 - Planning for the Cyclist
- Output 10 - Cycle Parking Standards

To produce a comprehensive set of cycling design guidelines it is imperative that Cycling by Design is developed through consultation thus drawing upon a wide spectrum of practitioner and user experience. The assimilation of the feedback received will be of paramount importance to the document's future success. The opportunity to present this paper at the Velo-City 99 conference is seen as an important part of the consultation process and any parties that have not already been consulted are invited to contact either of the speakers.

SCOPE OF CYCLING BY DESIGN

Cycling by Design is presented in 14 Chapters. The following paper provides an overview of some of the key aspects introduced.

Chapter	Title	Chapter	Title
1	Introduction	8	Footpaths, Footways & Areas Free From Motorised Traffic
2	National Cycle Network	9	Rural Roads
3	Planning for the Cyclist	10	Integration with Public Transport
4	Geometric Design	11	Cycle Parking
5	Network Links	12	Construction and Maintenance
6	Junctions and Crossings	13	Publicity
7	Traffic Calming & Management Schemes	14	Trunk Road Cycle Audit Procedures

Planning for the Cyclist

Chapter 3 of Cycling by Design provides an introduction to cycle network development. Key criteria are identified and used as a base from which an adaptable method of network planning, incorporating an identifiable route hierarchy, is put forward. It is intended that application of the principles introduced within Cycling by Design will encourage a consistent level of cycling infrastructure to be developed.

It has been assumed that the prime target for the cyclist is 'a route that is suitable for cycling'. Provided that it is safe, convenient and pleasant to use, a route may be developed from either reallocating space to the cyclist within an existing road boundary or through construction of new cycling facilities. Careful design at junctions, treatment of major roads, signed routes along traffic calmed or minor roads and cycle tracks all have a part to play in developing existing infrastructure for safe and convenient cycling.

Currently there is no single correct method for developing suitable cycling infrastructure. Much remains dependent on the effective integration of cyclists needs with the broader traffic, environmental and planning objectives set by the relevant Authority. On the assumption that the existing road network should form the basis for future cycle infrastructure the following hierarchy of measures is proposed as a first stage in identifying the way forward.

- Traffic Reduction
- Traffic Calming
- Junction Treatment and Traffic Management
- Re-allocation of the Carriageway Space
- Cycle Lanes and Cycle Tracks

The effect on other road users must always be borne in mind. It is important to ensure that, while re-allocation of road space may appear beneficial to the cyclist, it may cause difficulties to other roads users which could lead to conflict and safety problems. In common with other infrastructure provision the need for a balanced approach is critical. Provision of cycle infrastructure should relate to the status of the cycling route within an overall network hierarchy. Cycling by Design categorises cycle facilities at three discrete levels, Strategic Routes, Commuter Routes and Local Access Routes. For smaller areas, a two-tier hierarchy involving only Strategic and Local Access Routes may be appropriate.

In order to plan in a rational and comprehensive manner for travel by bicycle, and to integrate it with other transport and planning developments, it is important to develop the hierarchy of measures and requirements into a framework for network planning. A six step process is proposed in Cycling by Design:

- | | |
|-----------------------------------|---|
| - Step 1: Quantify Demand | - Step 4: Opportunities & Constraints Mapping |
| - Step 2: Identify Accident Zones | - Step 5: Proposal Mapping |
| - Step 3: Quantify Traffic Flows | - Step 6: Assessment and Evaluation |

Local cyclists, cycling organisations and other parties likely to be affected by or have an interest in the development of the cycle network should be consulted throughout the process of devising a cycling strategy and planning a cycle network. Consultation should not however be used as a substitute for systematic surveys, planning and design.

DESIGN GUIDELINES

In order to develop a consistent and acceptable standard of cycling provision it is necessary to identify design guidelines that may be used to complement the network hierarchy introduced. Chapters 4 to 13 of Cycling by Design present a series of guidelines ranging from what is currently considered to be 'best practice' through to a lower acceptable standard that can be used in instances where desirable standards may not be appropriate, achievable or affordable. Guidance is provided on geometrical parameters and the physical layout of cycle facilities has been developed to take account of the hierarchy detailed in Chapter 3. 'Network Links' is presented below as an example of the typical form of guidance included within Cycling by Design and the style of figures used throughout the document.

NETWORK LINKS

In order to develop successful cycling infrastructure it is important to ensure that the most appropriate form of

network link is used. Network links may be provided in the form of Shared Road Links, Cycle Lane Links or Cycle Track Links. Provided that the hierarchy measures identified in Chapter 3 are followed then routes may be developed from any combination of network links.

Figure 1, developed by Sustrans from original guidelines produced by CROW, provides a graphical relationship between vehicle speeds, volume of motor vehicles, and types of link provision. Cycling by Design recommends that Figure 1 should be used in conjunction with an assessment of existing and latent cycle flows as the first step in choosing the most appropriate form of link provision. However reference should also be made to other factors such as:

- 85th percentile speeds in relation to speed limit;
- HGV content;
- Sight distances;
- Parking requirements;
- Regularity of junctions;
- Standard of junction and crossing provision;
- Treatment of private accesses, and
- Personal security.

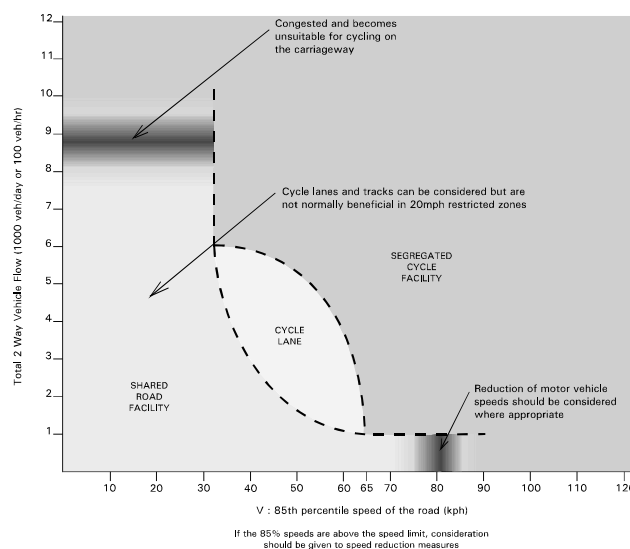
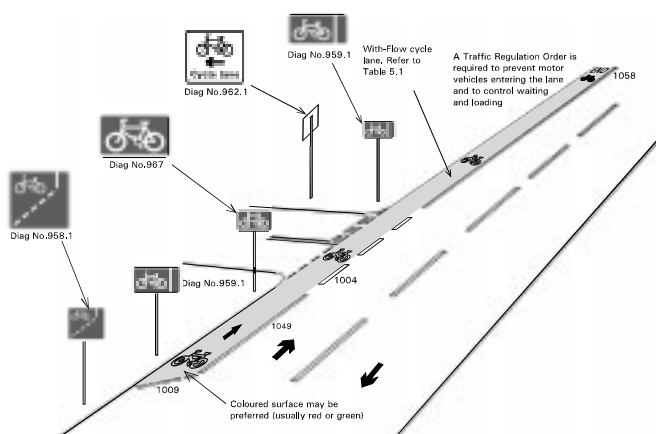


Figure 1: Link Specification Criteria



The various forms of layouts proposed in Cycling by Design are presented in pictorial form supported by tables that identify alternative details, such as the width of cycle tracks etc. Figure 2 represents the typical style of figures used.

The traffic signs and road markings detailed in the figures are cross-referenced, where appropriate to the Traffic Signs Regulations and General Directions 1994. The most regularly used signs and markings are recorded as an appendix to Cycling by Design.

Figure 2: Typical Layout of With-Flow Cycle Lane

ROAD CYCLE AUDIT PROCEDURES

In order to realise the potential of cycling as an integral part of any future transport system it is essential that all schemes likely to result in a change to existing infrastructure and land use fully consider the needs of the cyclist. The implementation of a series of Cycle Audit procedures for all trunk road capital investment schemes that are likely to have an impact on transport infrastructure and land use is seen as the most effective method by which this may be achieved. For this reason all Design Briefs must contain cycling assessment requirements and impose Cycle Audit Procedures. Cycling by Design introduces a three stage Cycle Audit Procedure:

- Strategic Audit: Confirms whether or not trunk road cycle facilities are required, confirms the likely extent of these and the need for subsequent audit work.
- Scheme Audit: Confirms whether all opportunities for cyclists within a scheme have been recognised and, where feasible, developed. The Scheme Audit is sub-divided into three discrete parts (Carriageway Audit, Parallel Facility Audit and Crossing Audit) in order to ensure that only sections relevant to the scheme under review need be completed.
- Safety Audit: Confirms whether a scheme is likely to be detrimental to cyclists' safety.

WHEN TO AUDIT

The earlier in the design process that cycling issues are taken into account the greater the opportunity to incorporate the needs of the cyclist into the overall design. Cycle Audits should be completed prior to:

- Stage 1 - Completion of Preliminary Design: The Stage 1 Audit has been designed to identify additions and modifications that may still be incorporated into the scheme during its development stage.
- Stage 2 - Completion of Detailed Design: The Stage 2 Audit should be completed either before the publication of draft orders and invitation to tender or during the tender process for Design and Build style contracts. The Audit recognises that major changes to alignment and junction layouts are less likely to be necessary and therefore focuses on issues of detail.
- Stage 3 - Completion of Construction: The Stage 3 Audit should be completed before the scheme or development is opened. The emphasis at Stage 3 is of the scheme's performance from the viewpoint of the end user and should be completed on site.

WHO SHOULD UNDERTAKE THE AUDIT

In an ideal world Cycle Audits would be undertaken by experienced Cycling Officers working in partnership with the Design Team. However, it is recognised that this will not always be feasible. In order to provide a flexible approach it is proposed that Audits should consist of a series of standard forms that may be completed by an experienced Design Team member. The completed forms should be reviewed and certified by a Cycling Officer (or Project Manager where no Cycling Officer is available). This approach will increase Design Team awareness of cycling issues and ensure that Cycling Officers are not overwhelmed by Audit work.

AUDIT PROCEDURES

The Cycle Audit procedures have been designed to be as straightforward as possible. Currently they are cross-referenced to the Cycling by Design guidelines. An outline of the proposed Stage 1 Audit procedure is presented below. Stage 2 and 3 Audits follow a similar process.

Stage 1 - Strategic Audit: An experienced member of the design team should complete the Strategic Audit. The completed Audit form, appropriate drawings and any relevant comments are then passed to the Cycling Officer/Project Manager for comment/approval. If necessary the Cycling Officer/Project Manager will arrange meetings to discuss any areas of concern. Once the Cycling Officer/Project Manager is satisfied then the Audit form is countersigned and returned to the designer for retention and use. The scheme should not proceed to the next stage of development until the Audit form has been approved and countersigned.

Stage 1 - Scheme Audit: An experienced member of the design team should complete the Scheme Audit:

- Carriageway Audit: If the Strategic Audit indicates that a scheme either has, or is likely to have, a requirement for cycle facilities within the carriageway then a Carriageway Audit is to be completed.
- Parallel Facility Audit: If the Strategic Audit indicates that a scheme either has, or is likely to have, a need for cycle facilities outwith the main carriageway then a Parallel Facility Audit is to be completed.
- Crossing Audit: If the Strategic Audit indicates that a scheme either has, or is likely to have, a requirement for cyclists to cross the existing road network then a Crossing Audit is to be completed.

Stage 1 - Safety Audit: A Safety Audit should be completed for all schemes. If the facility being reviewed forms part of a scheme that is likely to have an impact on the road network then the approved Audit form is to be passed to the Road Safety Auditors in order that it may be incorporated into the Road Safety Audit. If the facility does not have an impact on the road network (e.g. a remote cycle track) then the design team should retain the approved Audit form as part of their Quality Assurance records.

In order to assess the effectiveness of the Cycle Audit procedures it is proposed that the current Stage 4 Safety Audit and formal Before/After studies will be used to monitor implemented facilities. Again feedback from these activities and practical experience will be used to adjust the Audit procedures as found necessary.

MORE CYCLING BY BETTER ROADCRAFT EDUCATION

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Background: Background in Transport Planning. Departmental Cycling Officer for six years. Responsible for promotion of city's cycling strategy, to improve conditions for cycling and encourage cycling as a mode of transport.

MORE CYCLING BY BETTER ROADCRAFT EDUCATION

In Leeds, we are developing a strategy for incorporating cycling skills training within a more broadly-based road user education. Children are taught skills appropriate to their age, initially as a pedestrian walking with adults then progressively becoming more independent as they get older. Practical cycling skills are introduced at around ten years of age with more advanced skills being taught to older children.

This system has followed extensive surveys of schoolchildren and the effectiveness of previous training methods. There was little evidence that cycle training led to more cycling but no child who received training was recorded being injured as a cyclist in Leeds. We aim to introduce children to the concept of roadcraft and the opportunities which cycling offers at an early age to offset more inappropriate influences.

MEHR FAHRRADVERKEHR DURCH BESSERE VERKEHRSERZIEHUNG

Wir entwickeln in Leeds momentan eine Strategie für die Integration eines Radfahrtrainings in eine breiter angelegte Verkehrserziehung. Den Kindern werden ihrem Alter angemessene Fähigkeiten vermittelt. Anfangs lernen sie, als Fußgänger mit ihren Eltern zu gehen, dann werden sie mit zunehmendem Alter selbständiger. Praktisches Radfahren wird ab einem Alter von etwa 10 Jahren gelehrt, wobei älteren Kindern anspruchsvollere Fähigkeiten vermittelt werden.

Das System basiert auf umfassenden Befragungen von Schulkindern und auf der Effizienz früherer Verkehrserziehungsmethoden. Es gab wenig Hinweise darauf, daß Radfahrtraining zum vermehrten Gebrauch des Fahrrads führt, doch wurde kein Kind, das an dieser Verkehrserziehung teilgenommen hat, in Leeds als verunglückter Radfahrer registriert. Wir möchten Kindern das Konzept des Verkehrsmittels näherbringen und sie bereits in einem frühen Alter über die Möglichkeiten informieren, die ihnen das Radfahren bietet, um weniger geeigneten Einflüssen entgegenzuwirken.

VEČ KOLESARJENJA Z BOLJŠO VZGOJO POZNAVANJA CEST

V Leedsu razvijamo strategijo za vključevanje treninga kolesarskih veščin v širše zasnovano vzgojo uporabnikov cestišč. Otroci se učijo veščin, ki so primerne njihovi starosti, sprva kot pešci skupaj z odraslimi, nato pa z odraščanjem postajajo vse bolj samostojni. Praktične kolesarske veščine so predstavljene pri približno desetih letih, zahtevnejše veščine pa pri starejših otrocih.

Ta sistem je nastal na osnovi izdelanih raziskav šoloobveznih otrok in na podlagi uspešnosti predhodnih metod treninga. Malo pokazateljev je bilo, da učenje o kolesarjenju vodi do več kolesarjenja, vendar nobeden od otrok, ki so bili poučeni o kolesarjenju, ni bil zabeležen kot poškodovan kolesar v Leedsu. Stremimo k temu, da poučimo otroke o konceptu poznavanja obnašanja na cestišču in možnostih, ki jih kolesarjenje ponuja, v zgodnjih letih, da s tem odstranimomanj primerne vplive.

MORE CYCLING BY BETTER ROADCRAFT EDUCATION

INTRODUCTION

Most road traffic accidents are caused by human error. Road and vehicle designs are continually being modified to lessen the severity of injuries resulting from these human errors but the best way of reducing accidents is to avoid them by improving human performance. This paper briefly describes the work done in Leeds to try to improve the performance of young cyclists by coupling cycling skills training with the teaching of a broader appreciation of travel needs, opportunities and consequences culminating in a current, more comprehensive initiative. It is anticipated that participating children will be more likely to exercise more informed choices related to their travel both now and in later life. They may be more likely to choose to cycle, and when they drive, as most will eventually do for some journeys, they may be more likely to exercise more consideration for others.

CYCLING IN LEEDS.

Cycling accounts for only about 1.3% of journeys in Leeds. Few towns and cities in the UK exceed 10% whilst in some parts of Europe 20% and more is not uncommon. There is nothing remarkable about the topography or climate of Leeds to account for this apparent reluctance to cycle. It just seems as though the majority of its residents do not perceive cycling as a realistic everyday transport option. Nevertheless, the City Council, in recently published Transport and Green Strategies, has resolved that cycling should be given a chance to play a bigger role in the future. I do not know of any cities starting from such low a base which claim to have encouraged major increases in cycling. We will probably have a hard task ahead of us. Provision of better conditions for cycling in Leeds is important and will take time but the greatest challenge is likely to be to change people's attitudes so that cycling is seen as a normal and realistic transport option.

Accident records show that the causes of accidents involving young cyclists differ markedly from those involving older cyclists. In the UK, the Police Officer attending an accident is required to briefly assess the cause. Between 1995 and 1997 in Leeds, 74% of accidents involving cyclists under the age of 16 years were assessed as being the fault of the cyclist whilst for older people this figure was only 23%. Where possible, more details of the cause are recorded and these show that, of accidents where a cyclist under 16 years of age was deemed to be at fault, 47% were due to "disobeying junction control" and a further 29% were caused by "riding off the footway". For older cyclists, these values were 10% and 3%. Whilst the Police are not infallible in their assessments, these numbers do indicate that the actions of child cyclists are far more likely to result in accidents than those of older cyclists and these errors of children are likely to be due to failing to apply basic rules. There is therefore a strong case for targeting effort at initiatives to improve children's knowledge and application of cycling skills.

In the UK, there is concern over the increasingly sedentary lifestyles of many children, a trend which is exacerbated by more children being taken to school by car. We are told it could lead to more health problems in the future. This is encouraging some local authorities to try to encourage more physical activity by encouraging more walking and cycling to school. Most focus directly on the actual journey by introducing various forms of visible measures such as traffic calming, protected road crossings, advisory and traffic-free routes, supervision of journeys and provision of better facilities for cyclists at school. Cycle training courses linked to permits for the use of school cycle facilities is also a common element as is some form of road safety advice for pedestrians. All this is fine but, in Leeds, we consider two important elements may be missing from these programmes:

- Children must want to put their skills into practice. It is not uncommon for children, having successfully completed a cycle training course, to be seen reverting back to their old ways straight afterwards. If these children had a better understanding of how road networks operate and how different road users behave and interact there should be a greater likelihood of them making better choices and applying the user skills they have learned. We consider this has the best chance of being achieved if this awareness is developed gradually over a long timescale.

- Parents need to be confident of their children's inclination to put the skills they have learned into practice, otherwise they are less likely to allow them to cycle or walk to school. If children can show an understanding of and a responsible attitude towards road safety issues, parents are more likely to co-operate. It should also help to alleviate concerns the school may have. Therefore, parents and school management must understand, approve of and be supportive of the initiative.

During the last three years, we have carried out pilot projects in Leeds to help develop our knowledge and experience of how to incorporate these issues into school lessons and the design of complementary programmes for teaching walking and cycle skills. The remainder of this paper summarises this work and describes how it is being improved and extended.

SCHOOL PUPIL SURVEYS

Leeds City Council has been running cycle training courses for a number of years with some success, if this can be measured by the number of complementary comments from parents and teachers. However, we had little idea whether they resulted in more children cycling and in fewer accidents. To give us better information, in 1996 we surveyed pupils in Leeds secondary schools and obtained responses from 3,500 of them.

The findings showed there was a great deal of fun cycling near to home but very few children were making real journeys by bicycle and perceiving their bikes as a transport option. Those who had taken a cyclist training course seemed not to cycle any more than others. This low level of cycling may not be what children actually want because, whilst only 2% said they cycled to school, 46% said they would like to. Many schools did not provide secure cycle parking and actively discouraged pupils from cycling to school. Pupils' main concerns about cycling were "bike being stolen" (girls 59%, boys 66%) and "fast moving traffic" (girls 72%, boys 48%). Other, but less frequently mentioned, concerns were "bad weather/darkness" and "attack by strangers". Changes which pupils most often said would encourage them to cycle were "secure parking" (girls 56%, boys 60%) and "special measures for cyclists" (girls 46%, boys 40%).

Most pupils (87%) travelled less than 3 miles, an easy distance to cycle for a young person of average fitness. The likelihood of travelling by car (15% did so) did not seem to be related to the length of the journey so many of these were easy walking or cycling distances. Traffic congestion near to school causing safety problems for walkers and cyclists is often a major community concern and is frequently given as a reason why parents drive their children to school. Relatively few of the pupils surveyed had been involved in an accident whilst cycling but, of those who had been, none reported that they had taken a cyclist training course. It seemed possible that cyclist training had helped those who had undertaken courses to avoid having accidents.

Overall, the study indicated that the policy of providing cyclist training was not sufficient by itself to encourage more children to cycle but there seemed to be considerable potential demand for cycling to school if the major concerns could be addressed.

SAFE ROUTES TO SCHOOL PILOT

This initiative was based at Temple Moor High School in the suburbs of east Leeds. It is one of ten schools taking part in a national project carried out jointly by Sustrans (a civil engineering charity promoting non motorised forms of transport) and the respective local authorities. Temple Moor School has 970 pupils in the age range 11 to 18 years and there has been no provision for cyclists at school for many years. The aim of the project was to encourage cycling and walking to school by identifying and implementing appropriate measures.

In 1997, a detailed survey of pupils' travel patterns and attitudes produced findings on attitudes and preferences very largely compatible with the earlier survey mentioned above. It also identified specific problems and difficulties experienced or anticipated with walking or cycling to the school. This led to a list of suggestions for highway modifications which was considered by the City Council and distilled into a programme which could be funded from highways budgets. Included were a new signal controlled crossing which cyclists could use outside the school, some traffic calming, cycle lanes and minor junction works. A separate funding package was put together for measures within the school grounds such as covered cycle parking and modifications to two pedestrian access gates. Implementation is nearing completion and, in January 1999, the school is launching a cycling to school scheme issuing permits to pupils who

have successfully completing the City Council's cyclist training course and undertake to follow certain safety and security rules.

Effort was made to involve parents in the project and respond to feedback given. Their continuing support will be essential for the scheme to be a long term success.

THE SCARS PROJECT

SCARS is an acronym for Schools in the Community, Action Research on Safety. The principle aim of the project was to devise a series of interventions in a sample of primary schools that would encourage pupils to think about everyone's responsibility for road safety. The interventions took place during 1995 and 1996 and four types of evaluation were carried out to assess the effects - conflicts, road crossing by pedestrians, vehicle speeds and flows, attitudes and perceptions.

Packages were prepared and briefing sessions held to illustrate to teachers how transport and road safety issues can be used in teaching standard curriculum subjects. Advice on pedestrian skills training was disseminated by issuing leaflets to parents because of concerns over safety and insurance implications of adults taking children into the road environment. After these interventions, no discernible change in pedestrian behaviour or in vehicle speeds and flows was detected but there was evidence of fewer children choosing the car as their preferred mode of transport to school and of an increased awareness of pollution being a reason for this. It was felt that timescale and other constraints on the project had influenced the effectiveness of the interventions but valuable experience had been gained.

Parents, and the responsibility usually fell to mothers, seemed to be unaware that they might be able to play a role in reducing the danger from traffic and enabling children to venture outdoors unaccompanied by an adult. Their response to an increased perception of danger to their children was to accompany them on more of their journeys and to keep them indoors more. This tendency is reinforced by an image of the macho desirability of cars and car travel continually being presented by advertisements and the media in a way cigarettes were not so long ago. As many as 84% of parents felt that the roads in their area were not safe and some parents feared "stranger danger" just as much. In reality, there were no concentrations of recorded accidents or incidents to suggest that children going to or from school are in particular danger.

Children appeared to want more independence. Travelling to school by bicycle was the preferred choice of the majority of respondents and travelling by car came third. The scale of these results may have been influenced by the preponderance of low income families and low levels of car ownership in the study areas. The study concluded that parents were shouldering the burden of responsibility for child safety and that a more effective partnership between local councils, police, school, parents and children is required to share the burden more equitably.

CYCLIST TRAINING

Leeds City Council runs cyclist training courses which have a large on-road content. A small charge is made but not sufficient to cover the cost of running the courses. The number of courses is therefore dependent on the budget provided and is not sufficient to satisfy all schools requesting them. The courses used to be for four or five days but more recently we have experimented with one day courses, concentrating very much on training on the road, in order to reach more children. Participants are required to bring roadworthy bicycles and be able to ride them competently and, as far as we can tell, the level of skills acquired during the shorter course seems to justify this change. As a result, the number of children being trained has risen from 800 in 1996 to 1400 in 1998.

It had been felt that the last year at junior school (ages 10-11 years) was the best age to provide cyclist training. By that age children are generally able to control a bicycle, are sufficiently receptive to on-road training and have often started to develop the potential for making journeys by bicycle. The aim of the course was thus to provide the confidence and skill for them to safely cycle to school. In recent years we have received an increasing

number of requests for cyclist training for other children and occasionally for adults. Also, as part of our Safe Routes to School work, courses to further develop cycling skills and concentrate on the importance of route planning are held at participating secondary schools and priority is given to their feeder primary schools.

CURRENT DEVELOPMENT OF COMPREHENSIVE EDUCATION INITIATIVES

Experience working on the above projects has led us to believe that road safety education should not be focused on a single cyclist training course plus a classroom session at some time. We believe that what is needed for a real chance of influencing behaviour on the roads, in Leeds at least, is for travel and road safety issues to be explored with children throughout their school careers starting with the very young. Issues should be carefully selected and dealt with in ways appropriate to their age and we are now building on our SCARS work and experience gained in the other projects to develop a new range of teaching packs.

We are also extending our safe routes to school initiative so that each new scheme will be based on a targeted secondary school and the neighbouring primary schools from which most of its pupils are drawn. This means that long term teaching programmes can be developed through both primary and secondary schools which maximise their influence and the benefits gained throughout the neighbourhood of the schools. At the time of writing we are working with a full "family of schools" for the first time. Introductory sessions with school managements have taken place followed by pupil and parent surveys similar to those done earlier at Temple Moor. The next stage is to analyse the results and identify what changes it would be helpful to introduce. At the same time we are building on the SCARS project experience by developing two programmes of teaching aids, one to raise children's awareness of the functions and impacts of various transport options and the other to teach them the skills they will need to use the options available to them safely and effectively.

CONCLUSIONS

A number of projects have been carried out in Leeds schools in recent years giving a better understanding of the potential for increased cycling and walking to school and how it might be achieved. It is clear that the injudicious actions of road users are a, if not the, most important causal factor of road traffic accidents and so it is important to develop effective ways of teaching walking and cycling roadcraft. The experience gained is now being used to develop a broader educational approach focused, at present, on one secondary school and its feeder primary schools but it is intended to extend the service to other families of schools in the future. The approach places special emphasis on teaching an awareness of a range of transport issues as a basis for more effective training of user skills.

CYCLING SKILL AND TTS RELATION TO INFRASTRUCTURE AND SAFETY**JOHN Franklin**

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ENGLISH

CYCLING SKILL AND TTS RELATION TO INFRASTRUCTURE AND SAFETY

The promotion of cycling usually concentrates on engineering measures to address the public perception that cycling is an unsafe activity. This has reinforced that perception, and the popular view that cycling can only be made safer by removing cyclists from sources of potential conflict.

There is evidence, however, that cyclists can cope with a much wider range of traffic conditions by learning a not-onerous set of cycling skills. The author will discuss the skills that cyclists need to share space with traffic, and how the design of highways can either assist or hamper skills acquisition. He will demonstrate how, by learning to cycle skilfully, the horizons of where it is safe to ride are extended greatly.

TUESDAY

DEUTSCH

DIE VERKEHRSTÜCHTIGKEIT DES RADFAHRERS UND IHR BEZUG ZU INFRASTRUKTUR UND SICHERHEIT

Die Förderung des Radfahrens konzentriert sich normalerweise auf technische Maßnahmen, mit deren Hilfe man der Meinung der breiten Öffentlichkeit, der zufolge Radfahren unsicher ist, entgegenwirken möchte. Dadurch wurde jedoch genau dieser Eindruck gefestigt, und mit ihm die generelle Überzeugung, daß das Radfahren nur sicherer gestaltet werden kann, indem man den Radfahrer von potentiellen Gefahrenquellen fern hält.

Es gibt jedoch Hinweise darauf, daß Radfahrer weitaus mehr unterschiedliche Verkehrssituationen meistern können, wenn sie ein gewisses, durchaus zu bewältigendes Ausmaß an Verkehrstüchtigkeit erwerben. Der Autor wird diese Fähigkeiten, die der Radfahrer benötigt, um sich den Platz mit den übrigen Verkehrsteilnehmern zu teilen, diskutieren und beleuchten, wie die Auslegung der Straßen die Aneignung einer solchen Verkehrstüchtigkeit entweder fördern oder behindern kann. Er wird zeigen, wie man, indem man das Fahrrad geschickt zu benutzen lernt, seinen Horizont erweitert und zunehmend größere Bereiche als sicheres Terrain betrachtet.

SLOVENSKO

VEŠČINA KOLESARJENJA IN NJEN ODNOS DO INFRASTRUKTURE IN VARNOSTI

Promocija kolesarjenja je običajno usmerjena na tehnične ukrepe, ko nagovarjamo javno razumevanje, da je kolesarjenje ne-varna dejavnost. To je takšno dojemanje še pospešilo in popularno mnenje, daje možno napraviti kolesarjenje varnejše le tako, da kolesarje odstranimo s površin morebitnih težav.

Vendar obstaja dokaz, da so kolesarji znožni upravljati z mnogo širšim obsegom prometnih situacij z učenjem vrste netežavnih kolesarskih veščin. Avtor bo predstavil veščine, da kolesarji morajo deliti prostor z ostalim prometom, in pokazal, kako zasnova avtocest lahko bodisi pomaga ali ovira učenje the veščin. Predstavil bo, kako lahko z učenjem spretnega kolesarjenja znatno razširimo obzorja o tem, kje je varno voziti.

CYCLING SKILL AND ITS RELATION TO INFRASTRUCTURE AND SAFETY

Cycling is an activity with more than its share of misconceptions and paradoxes. People believe cycling to be slow, but cycles are often the fastest mode of transport in towns. People think of cycling as hard work, but the cycle is one of the most efficient machines yet invented, requiring less than half the energy it takes to walk.

In recent years the traditional myths about cycling have been augmented by the perception that cycling is also inevitably dangerous. Yet cyclists live some 7 years longer than people who do not cycle, and during that time they lead much healthier lives, with fewer illnesses and less time off work.

The fear that bikes and cars are incapable of mixing safely has led to the popular belief that for cycling to be a practical mode of transport, cyclists should keep - or be kept - out of the way of motor traffic as much as possible. This has led to a concentration on engineering measures to promote cycling, and in particular on measures that segregate cyclists, in varying degrees, from other traffic.

So strong is the perception that cycle paths and other facilities must be safer than riding in traffic that few people look further. But where this has been done - and in particular where account has been taken of unreported crashes, which are much more common off-road, although they are not necessarily less serious - the statistics are not comforting. From across Europe and America there is much evidence of cycle facilities being the least safe place to cycle.

It helps to know something about the causes of cycle crashes. Contrary to popular opinion, the great majority of crashes in which a cyclist is hurt do not involve a motor vehicle. In fact, fewer than 1 in 6 crashes is so related. But this does not necessarily imply less serious injury, and there have been fatalities with no-one but the cyclist involved. Nearly all of these crashes are a result of a lack of skill by the cyclist.

Probably the most common cause of cyclist injuries is poor surfaces. This is not just due to surface damage, such as potholes, that the cyclist cannot avoid. Off-road cycle routes with a rough or loose surface, feature prominently. Many off-road routes - sometimes promoted as 'safe routes' for families - may be exciting 'challenge' routes for the experienced rider, but pose real problems for the novice, for whom cycle control can be a real difficulty as the front wheel moves unpredictably from side to side and up and down. People new to cycling need firm, level surfaces on which to learn the basic skills of bike control.

A lack of discipline - not following the established rules of the road - often leads to crashes. A failure to keep left (or right, according to country) is common on off-road paths, as is cutting corners where visibility is poor. Minimum danger from others does not necessarily lead to minimum casualties. The extra discipline enforced by the presence of a greater perceived danger, such as motor traffic, generally results in the safest cycling environment overall.

When collisions do occur between a motor vehicle and a cyclist, the motorist is often at fault. Nevertheless, most of these crashes could have been avoided altogether by the cyclist riding more diligently, such as by making his presence more obvious, for potential collisions are frequently foreseeable in sufficient time to take counter-action.

People tend to fear most being hit from behind whilst cycling - the only type of crash best prevented by segregation - but this risk is very small, especially for someone who rides conscientiously. Most crashes are as a result of turning or crossing movements, and occur because the cyclist is not seen, or his actions not predicted. All drivers give most attention to those parts of the highway where there is risk to themselves, and see much less easily anything, or anyone, outside of a quite narrow field of vision. A cyclist is safest riding within this zone of maximum surveillance, not outside it.

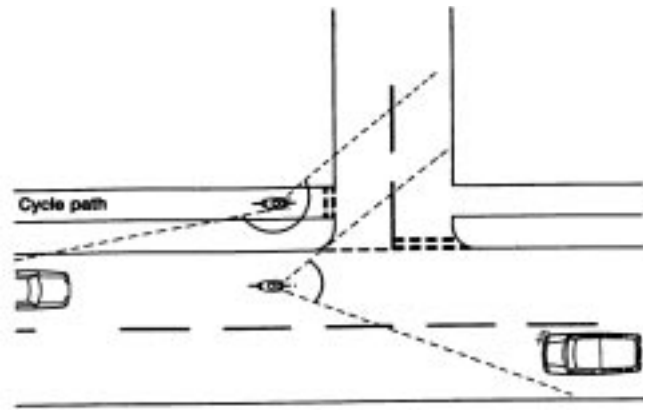
Cycle paths alongside roads are often advocated as the 'ideal' way to improve cycling safety, but to the surprise of many people, their safety record in practice is poor. It is in fact easy to see why.

Consider a simple T-junction with a cycle path parallel to the through road. The first thing to notice, is that the addition of the cycle path changes a 3-way junction into a 5-way one, increasing its complexity for cyclists and motorists alike. Good road engineering strives to minimise confusion; making a junction more complicated invariably increases the likelihood of someone making a mistake.

Look at two cyclists approaching the junction, one on the cycle path and the other on the road. The path cyclist has to look for danger through an angle of up to 270°, for he is at risk not only from traffic entering or leaving the side road ahead, but

also from vehicles following that might turn into the side road. Looking for traffic through such a large angle requires much movement of the head, which takes time, and the cyclist has no way to influence the actions of other drivers. Last-minute changes of circumstances are easily missed. At busy times, the only way to be really sure that there is no danger from any direction is to stop, and even then the cyclist may face increased risk re-starting.

This situation is much the same in countries where cycle paths have marked priority over side road traffic, for the cyclist cannot assume that this priority will be respected. Motorists frequently do not notice cyclists on cycle paths, as they are outside their zone of maximum surveillance. Particularly at risk is a cyclist who is riding in the reverse direction to nearside road traffic - for it is contrary to normal road behaviour for cyclists to ride in this way - or who approaches the junction quickly.



The road cyclist, on the other hand, can use positioning and listening to reduce the angle over which concentration is necessary to less than 90° close to the junction, which is within the compass of eye movement alone and can therefore be carried out more easily and quickly. Through positioning, a cyclist can exert considerable influence on the movements of other vehicles, as well as ensuring that he is easily seen. He also enjoys the benefit of a speedier and less complicated passage.

This example illustrates, too, why collisions at cycle path crossings are often more serious than crashes elsewhere on roads. If a cyclist is hit by a car at a crossing, he will be hit side-on and will bear the full force attributable to the car's velocity. Most road collisions, on the other hand, involve only a glancing impact when the force felt by the cyclist is less.

Cycle lanes and other means by which cyclists are expected to ride separately from general traffic lead to similar problems and, again, the casualty record is not good. The actions of cyclists are best understood and respected by others when they are following the same rules of the road. If cyclists behave differently to other road users, they can expect to come into conflict with them more often, for the mutual understanding, so essential for road-sharing, will be less. Many facilities introduced to improve cycling safety address problems that seldom lead to crashes, whilst introducing new dangers that do. At the same time, they require cyclists to exercise greater, rather than less, skill in more demanding situations. Many people simply can't cope.

The effect of cycling infrastructure on skills acquisition has been little researched, but there is evidence that the segregation of cyclists can adversely affect development of the skills that contribute to safe road-sharing. One result is that when someone needs to cycle in traffic, they are more vulnerable. Another is that their cycling horizons are much limited.

People who regularly use cycle paths can get used to taking chances, both because it can be so difficult to give proper attention at junctions, and also because they believe the paths to be inherently safe. Because positioning and signalling play little part in protecting or affording priority to the cyclist, these skills are not practised so often. Because cyclists are kept separate from other traffic for much of the time, they do not learn how to co-operate and integrate with others. As previously observed, even such basic principles as keeping left (or right) are widely ignored.

Bad cycling practices develop instead of good cycling skills. It is a great mistake to think of cycle paths as a training ground or stepping stone to cycling more widely; they can so easily become a ghetto from which it is all the more difficult to venture further.

One manifestation of this is the tremendous growth over just a few years in Britain in the number of people who now cycle on pavements, even when the adjacent road carries so little traffic as to be a problem for no-one. This trend has, I believe, much more closely mirrored the growth in cycle facilities (especially cycle/pedestrian paths) than traffic growth.

People are becoming stuck in a vicious circle where, led to fear traffic, they ride away from it as much as possible.

frequently in places where cyclists should not ride and where actual danger is greater. At the same time, they forego the skills they would otherwise acquire through interacting with other road users, which makes them all the more vulnerable and afraid when they do have to share the same road space. Fear grows and safety declines, for unskilled cyclists are at risk wherever they ride. Is it really a coincidence that the rapid growth in cycle facilities over the past few years has been accompanied by further decline in cycle use?

By contrast, someone learning to drive a car is not taught to fear and avoid traffic, but how to cope with it, yet a car driver is not that much less at risk on the roads than an adult cyclist. Would motoring have become as popular if its promotion had emphasised danger and scared people unnecessarily in the same way as so many current 'pro-cycling' policies? Is learning to drive a car skilfully the subject of stigma, or does it confer status? People have high expectations of their ability to drive well, why not also of their ability to cycle?

Cycling safely on the roads is not simply a matter of luck, and it does not depend solely upon the behaviour of motorists. Safe cycling is mainly about adopting sensible techniques, for cyclists can cope with a wide range of traffic conditions by learning a not-onerous set of cycling skills. Furthermore, skilled cycling is not the province of only the super-fit. Integrating safely with traffic depends much more upon technique than physical strength, which is a decisive advantage in only a few situations.

The emphasis on facilities and danger is depriving many people of the skills they could so easily acquire, and of the freedom to cycle widely that they would value, by undermining the basic confidence that they need to succeed. Whilst some roads pose real problems for cyclists, in most cases it is the cyclist's lack of skill that is the main difficulty, not roads or traffic.

Good positioning is the most important skill for a cyclist to acquire, yet it is precisely here that most cyclists perform badly. Many cyclists fail to position themselves properly because of their fear of traffic, yet ironically, it is this very fear that puts them most at risk. Good road positioning increases your margin of safety by riding where you can obtain the best view, where you can best be seen by others and your movements predicted, and where you may deter movements that could be a danger to yourself. It also allows you to ride as direct a route as possible, conserving your energy and making control of the bicycle as simple as possible.

Good road positioning is not about keeping out of the path of other traffic as much as possible. Telling cyclists to keep to the road edge, and restricting their movements through cycle lanes, compromises their ability to react to changing circumstances and encourages bad riding practice generally.

Learning how to alter one's position in traffic makes it easier to pull out when passing side roads, to overtake parked vehicles and to make right turns off two-lane roads. All of these movements are carried out badly by many cyclists, contributing to some of the most common types of crash.

To progress further a cyclist needs to learn how to negotiate with other drivers, which is the skill of establishing co-operation with others to facilitate progress and to protect you from the dangers which might otherwise be present. There is nothing awesome about negotiation nor, practised properly, is it at all unsafe. In all facets of life the great majority of people respond willingly to a direct appeal for assistance. Negotiation is such an appeal. It does require, however, that the cyclist seeks deliberately to integrate with traffic. In this, and other aspects of skilled cycling, the biggest hurdle to overcome is putting aside the prejudice that cyclists and motor vehicles should not mix.

The cyclist who learns positioning, negotiation and good judgement is able to share most roads in most places with a minimum of difficulty. Although such skills are seldom taught, they have been the stock trade of experienced cyclists for decades. They confer safety, mobility and freedom for cycling in a way that no form of separate infrastructure has yet succeeded in achieving, and this explains why, in countries where cyclists have the choice, most cyclists of wide experience prefer to do most of their cycling on the road.

Whilst changes are needed to some roads to make them easier for all users to share, especially by reducing speeds at places of potential conflict, for the greater part the road network already provides the best infrastructure for cycling. With better guidance and encouragement on how to cycle well, through the development of appropriate skills, not only could more people cycle more widely, but cycling might enjoy a higher status as a practical means of transport that people aspire to adopt for themselves.

WHY SHOULD CYCLISTS WEAR A HELMET?

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TUESDAY

WHY SHOULD CYCLISTS WEAR A HELMET?

Road safety for cyclists has become a political issue in many countries around the world. Different approaches lead to different results. The convenience of making helmet use mandatory for cyclists is a recurrent question in this context. This paper discusses some of the most important arguments for and against compulsory cycle helmets in a global approach including aspects of safety, health, economy, politics, psychology and legislation. During its presentation at the conference, reference will also be made to the initiative of the Spanish Parliament for implementing mandatory helmet use and other measures for cyclists, and the latest development in this process will be reported.

WARUM SOLLTEN RADFAHRER EINEN HELM TRAGEN?

Die Verkehrssicherheit für Radfahrer ist in vielen Ländern in allen Teilen der Welt zu einer politischen Frage geworden. Unterschiedliche Ansätze führen zu unterschiedlichen Resultaten. In diesem Kontext stellt sich immer wieder die Frage nach der Sinnhaftigkeit einer Helmpflicht für Radfahrer. Dieses Referat präsentiert im Rahmen eines globalen Ansatzes, der auch Sicherheits- und Gesundheitsaspekte sowie wirtschaftliche, politische und psychologische Gesichtspunkte und den Bereich der Gesetzgebung berücksichtigt, einige der wichtigsten Argumente für und gegen eine Helmpflicht für Radfahrer. Im Rahmen des Vortrags anlässlich der Konferenz wird auch auf die Initiative des spanischen Parlaments bezüglich einer Helmpflicht für Radfahrer sowie auf andere die Radfahrer betreffende Maßnahmen Bezug genommen.

ZAKAJ BI MORALI KOLESARJI NOSITI ČELADE?

Prometna varnost je postala politično vprašanje v mnogih državah po svetu. Različni pristopi vodijo do različnih rešitev. Zahteva po obveznem nošenju čelade za kolesarje je postala v tem kontekstu ponavljajoče se vprašanje. Referat obravnava nekatere najpomembnejše argumente za in proti obveznim kolesarskim čeladam z globalnim pristopom, vključno z vidikom varnosti, zdravja, ekonomije, politike, psihologije in zakona. V času predstavitve na konferenci, bo predstavljena vsebina tudi iniciativi španskega parlamenta za implementacijo obvezne uporabe čelad in drugih ukrepov za kolesarje, kakor tudi zadnji dosežki v tem procesu.

WHY SHOULD CYCLISTS WEAR A HELMET?

INTRODUCTION

At the edge of the 21st century, motorised, computerised, polluted, with hunger and violence in large parts of the world, the bicycle stands out as a device on a human scale, a discreet companion for millions of persons who use it for transport or leisure purposes from Cuba to Taiwan, from Canada to New Zealand. Most of the world's cyclists and their governments have to face basic problems of survival and do not give much thought to the issue of bicycle helmets, which may seem to them a pastime concern for some people in over-developed countries, diverting attention from the real problems. In fact, the problems we have to tackle in the industrialised countries are the negative effects of sedentary life style on public health, the impact of polluting industries (car industry among them) on the whole planet and the unsustainability of continuous economic growth. We have to bear in mind this wider context if we do not want to get lost in engineering details of numbers and percentages.

SOME REMARKS ON ROAD SAFETY

In our towns and cities, automobiles have got a firm hold of much of the available public space, to the detriment of other uses such as children's games and social communication among people. The street has become hostile and dangerous, especially for the young and the elderly: persons aged under 14 and over 65 sum more than 43% of pedestrian victims of road accidents in Spanish built-up areas (1), where motorists "impose themselves recklessly and brutally", as a comparative study carried out in five European countries concludes (2). People react to such a situation by avoiding exposure (i. e., they don't go out) and accepting the risks of motor traffic as necessary and inherent to modern life.

So it does not surprise that moving around amidst the cars with nothing to protect the body is perceived to be dangerous, especially by those who do not normally cycle. However, the odds are against pedestrians (see Table 1). For them, the percentage of fatalities among casualties is 2 times higher than for cyclists on road and 3 times higher in town, i. e., pedestrian accidents are likely to be more severe. The same comparison between cycle users and occupants of other vehicles gives a similar fatality percentage for both groups in town and overall; only on road the cyclists' life appears to be more at stake when involved in an accident.

Table 1. Cycling is less dangerous than walking. Deaths from road accidents in Spain in 1997, expressed in numbers and as a

Type of road use	Town			Road			Total		
	Deaths	Victims	%	Deaths	Victims	%	Deaths	Victims	%
Cycling	22	1,620	1.36	94	1,023	9.19	116	2,643	4.39
Other vehicles	609	51,634	1.18	3,911	62,830	6.22	4,520	114,464	3.95
Pedestrians	501	11,624	4.31	466	2,120	21.98	967	13,744	7.04
All road users	1,132	64,878	1.74	4,471	65,973	6.78	5,603	130,851	4.28

percentage of the total number of victims (injured and dead) in each category of road use. Data source (1)

These data illustrate the danger and severity of accidents. Clearly, pedestrians have the worst share and motor vehicle occupants the highest number of victims.

It can be argued that everybody is a pedestrian at some time or other, so the actual risk of getting involved in a fatal accident would be lower. Dorothy Robinson (3) has calculated that the risk per million hours is very similar for cyclists and car occupants (0.41 and 0.46, respectively), double for pedestrians (0.80) and 17 times higher for motor cyclists (7.66). With respect to head injury deaths per million hours, the proportions are the same (0.19, 0.17; 0.34; 2.9), with most cyclists unhelmeted and most motor cyclists wearing a helmet. It has also been estimated that swimming produces more deaths per million hours than cycling (4). Swimmers and cyclists have in common that skill plays an important role for safety, and even risky behaviour hardly ever endangers other persons than themselves. Would any government consider to make floating devices compulsory for swimmers?

SAFETY DEVICES FOR ROAD USERS

Seatbelts and motor cycle helmets are designed to mitigate the effects of impact forces on their users in case of accident. It is not the purpose of this paper to discuss their efficiency in this primary sense. But some thought shall be given to undesirable side effects on other road users. An internal report of the British Department of Transport (5) studying the effects of seat belt laws in eight European countries concludes that the law was "followed by an increase in injury rate" in each of the countries, especially among pedestrians. Risk is shifted from the source of danger onto the victim. Improved safety for car occupants is compensated by more dangerous behaviour, so that the overall risk is the same for the driver (although not for other road users). There are two ways out of this situation: a) get everybody armoured to immobilisation, or b) work on driver behaviour and traffic calming.

Helmets have been tried on various types of road users, from schoolchildren to car drivers, with different results. The Australian Federal Office of Road Safety comes to the conclusion that "bicycle-style" helmets or even padded headbands for motorists are as effective as airbags and much cheaper (7). In prevention of massive resistance by car users, the authorities hurry to say that it is not foreseen to make them compulsory, but people shall be able to make an informed choice (7, 8).

No benefit through helmet wearing is the result of a Japanese study where education centres were allowed to compel pupils to wear helmets on their way to school (6).

Similarly, helmets imposed on cyclists by law in Australia have been shown (3, 9, 10) to have no positive effect on accident and head injury rates (these are to be attributed to campaigns against speeding and drink-driving), to deter a high percentage of children and many adults from cycling, and thus to produce a loss of health benefits that outweighs any possible benefit through helmets. In 1994, Australia started to dismantle the "helmet law", beginning in the Northern Territory, where bicycle helmets are no longer compulsory under all circumstances.

HELMET PERFORMANCE VS. HELMET POLICY

Bicycle helmets complying with the new European safety standard shall, "...according to calculations on European level, avoid thousands of serious or even fatal accidents of cyclists". This short notice published in a traffic magazine (11) helps spreading the message that helmeted cyclists will not get involved in accidents, and, in any case, that bicycle helmets are life-savers. The same source also exhibits a more subtle way of promoting the image of cycle helmets: equalling correct behaviour with helmeted cyclists, whereas offenders are always shown unhelmeted (11, 12). Will knowledge, skill and caution flow into a person's head through the helmet? Or was the whole political elite of Europe exhibiting wicked behaviour and offence on their bicycle ride in Amsterdam in 1997, when all national newspapers had their photo on the cover page and none was wearing a helmet?

Mythical belief in the benefits of bicycle helmets contrasts sharply with their actual performance as certified by the helmet industry or the standard bodies. Firstly, they advise the users that a helmet may be invisibly damaged through a fall or common chemicals. If damage is invisible, how can anybody know if his/her helmet is functional and not a mere bluff? Then, Snell or ANSI test procedures do not go beyond simulating a very simple accident situation: a straight fall from the bicycle at a maximum speed of 20 km/h, with no other vehicles involved. However, statistics show that solo accidents only account for a small percentage of cyclist casualties: just one out of ten bicycle accidents on road and two out of ten in town, according to official Spanish data (1). All the rest have more than one vehicle implied, most of them motor vehicles. The helmet industry cannot be made liable for insufficient protection offered by their product, because they insist that "...it is impossible to build a helmet that will offer significant impact prevention" (13). In fact, four of the five cyclists killed in Catalonia in the first half of 1998 were wearing a helmet and abiding the traffic law.

When confronted with arguments and figures on the undesirable outcome of helmet laws for cyclists, senator José María Escuin replied to a group of Spanish bicycle advocates in a personal interview in 1997 that he would not wish to charge his conscience with the death of any single cyclist not wearing a helmet. Perhaps he was not referring to the cyclist struck by a 52-ton crane in the centre of Barcelona a few months before, nor to the cycle commuter who was hit by a van, dragged along 200 m and then brutally flung aside by the van driver, a few months after the interview. And Mr. Escuin was certainly not worried about the fact that less people might want to cycle when obliged to wear a helmet, thus depriving themselves of health benefits which outweigh the risks of cycling by 20:1 (14).

CONCLUSIONS

- Cycling in general is not dangerous, and it is much safer than swimming or walking.
- Bicycle helmets are not designed for accidents which involve other vehicles, while most cyclist fatalities are caused by collision with motor vehicles.
- Some politicians and opinion-makers exhibit a hypocritical or at least uncritical view, claiming that helmets are the solution to cyclist fatalities, instead of promoting measures to reduce the dangers of motor traffic for all road users.
- Mandatory bicycle helmet laws have failed to reduce the rate of death and injury. Instead, they keep people off cycling and thus add to the health problems caused by sedentary lifestyle.
- In terms of public health and expenditure, it is much more efficient to use a bicycle helmet in a car than on a bike.
- The helmet industry adjust their testing standards to commercial purposes. They cannot guarantee that bicycle helmets are safe in use.

René Magritte, Sausage with helmet, 1929.

So, why should cyclists wear a helmet?



NOTES

- (1) Dirección General de Tráfico, Boletín informativo. Accidentes 1997, Ministerio de Justicia e Interior, Madrid.
- (2) Study carried out by Uniroyal, quoted by Juana Sánchez in "Cuestión de valor", Tráfico N° 124, July 1997.
- (3) Dorothy L. Robinson, "Head Injuries and Bicycle Helmet Laws", Accident Analysis and Prevention, Vol. 28, Nr 4, pp 463-475, Pergamon 1996.
- (4) Failure Analysis Associates Inc., quoted in: Ontario Coalition for Better Cycling, "Comparative risk of different activities. Estimates of fatal risk", <http://www.globalx.net/ocbc/comparat.html>. 1998.
- (5) DoT report quoted by Mick Hamer, "Report questions whether seat belts save lives", New Scientist, 7 February 1985.
- (6) Yamanaka Tatsuhiro, Ogihara Arata, "The effectiveness of wearing pedestrian helmet while walking from home to school in elementary school children", <http://www.nisu.flinders.edu.au/3icipc/program-THE-28.html>
- (7) Robert Wainwright, "Helmets for motorists in OZ", Sydney Morning Herald, 22nd Sept. 1998, <http://globalx.net/ocbc/carhelm.html>, 1998.
- (8) Nigel Perry, "Helmets for cars would save lives", The Dominion, Wellington, New Zealand, 29th Oct. 1998.
- (9) The Cyclists Rights Action Group, "Discouragement of Cycling, and Effects on Welfare", <http://www.pcug.org.au/~psvansch/crag/surveys2.htm>
- (10) Harry Owen, "The health of nations. An essay on the costs of not promoting cycling", Velo Australis Conference Proceedings, Fremantle, Western Australia, 1996.
- (11) Tráfico, XIII, Nr 124, Julio 1997, Dirección General de Tráfico (Ministerio de Interior).
- (12) Dirección General de Tráfico, Guía del ciclista, Ministerio del Interior, Madrid 1997.
- (13) Dr. George Shively from The Snell Memorial Foundation, quoted in Ontario Coalition for Better Cycling, Bicycle Helmets. Frequently asked questions, <http://www.globalx.net/ocbc/hfaq.html>, 1999.
- (14) Mayer Hillman, Bicycle helmets. The case for and against, Policy Studies Institute, London 1993.

CROSSING THE FRONTIERS OF AGE - CYCLING AND SENIOR CITIZENS

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ENGLISH

CROSSING THE FRONTIERS OF AGE - CYCLING AND SENIOR CITIZENS

This paper deals with the behaviour and the needs of senior citizens related to cycling. The needs of senior cyclists have been neglected in the past, although cycling is very important for senior citizens. In future we expect an increase of the number of senior citizens and an increase of their car ownership. Therefore the topic gets more and more important in order to promote sustainability in transport.

The goal of this paper is to analyse the behaviour of senior citizens and their problems and suggestions to improve cycling and to define "guidelines for senior-friendly organisation and infrastructure of cycling" in order to promote cycling especially for senior citizens (infrastructure, organisation, guiding system etc.).

DEUTSCH

ÜBERWINDEN SIE DIE GRENZEN DES ALTERS - RADFAHREN UND ÄLTERE BÜRGER

Der Beitrag beschäftigt sich mit dem Fahrrad als Verkehrsmittel für ältere Mitbürger. Die Bedürfnisse der älteren Radfahrer sind in der Vergangenheit stark vernachlässigt worden, obwohl das Radfahren für ältere Menschen ein wichtiges Verkehrsmittel darstellt. In der Zukunft wird die Zahl der Senioren und auch ihr PKW-Besitz stark zunehmen. Im Sinne einer nachhaltigen Verkehrsentwicklung wird daher das Fahrrad als umweltverträgliches Verkehrsmittel für Senioren immer wichtiger. Das Ziel des Beitrages ist die Analyse des derzeitigen Verkehrsverhaltens der Senioren in Bezug auf das Fahrrad sowie ihre Probleme und Verbesserungsvorschläge für den Fahrradverkehr. Als Ergebnis werden Richtlinien für eine seniorengerechte Organisation und Infrastruktur des Fahrradverkehrs vorgestellt.

SLOVENSKO

PRESTOP MEJA STAROSTI - KOLESARJENJE IN STAREJŠI MEŠČANI

Prispevek se ukvarja s kolesom kot prometnim sredstvom starejših meščanov. Potrebe starejših meščanov so bile v preteklosti močno zanemarjene, čeprav predstavlja kolo pomembno prometno sredstvo starejših ljudi. V prihodnosti bo število starejših ljudi in tudi njihovo lastništvo osebnih avtomobilov močno narastlo. V smislu stalnega prometnega razvoja postaja kolo, kot ekološko sprejemljivo prometno sredstvo, vedno pomembnejše za starejše ljudi. Cilj prispevka je analiza sedanjega obnašanja starejših ljudi v prometu, z ozirom na kolo, kot tudi njihovi problemi in predlogi za izboljšave kolesarjenja. Kot rezultat bodo predstavljene smernice za starejšim občanom prijazno organizacijo in infrastruktura kolesarskega prometa, z namenom promoviranja kolesarstva posebej za starejše občane (infrastruktura, organizacija, sistem vodstva...)

TUESDAY

CROSSING THE FRONTIERS OF AGE - CYCLING AND SENIOR CITIZENS

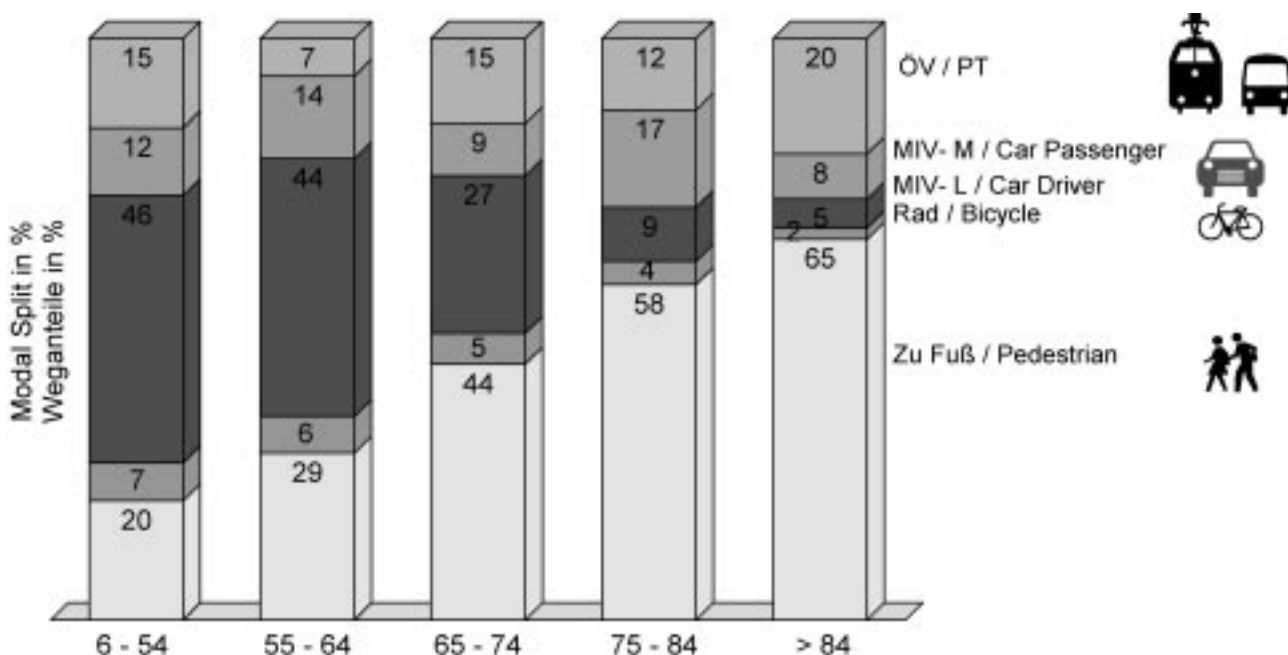
Die Bedürfnisse der älteren Radfahrer sind in der Vergangenheit stark vernachlässigt worden, obwohl das Radfahren für ältere Menschen ein wichtiges Verkehrsmittel darstellt. In der Zukunft wird die Zahl der Senioren und auch ihr PKW-Besitz stark zunehmen. Im Sinne einer nachhaltigen Verkehrsentwicklung wird daher das Fahrrad als umweltver-trägliches Verkehrsmittel für Senioren immer wichtiger.

Zur Analyse der vorhandenen Verkehrsnachfrage und der Probleme der älteren Menschen beim Radfahren wurden folgende Arbeitsschritte durchgeführt:

- Auswertung der österreichweiten Verkehrsbefragung 1995 im Rahmen des österreichischen Bundesverkehrswegeplanes für die Steiermark.
- Mündliche Befragung von älteren Menschen zu Ihren Problemen und Verbesserungsvorschlägen in bezug auf den Fahrradverkehr.

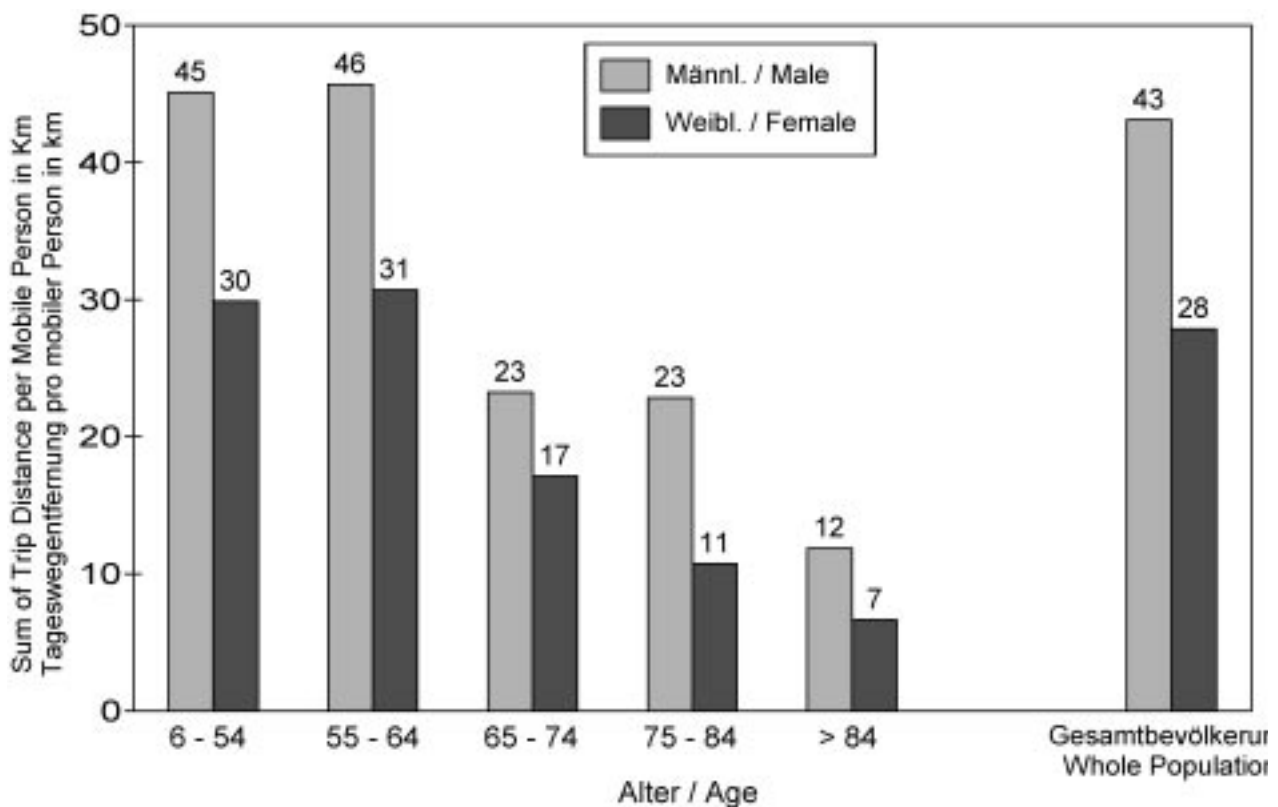
Die Analyse der Verkehrsmittelaufteilung der steirischen Bevölkerung zeigt, daß der Fahrradverkehr derzeit auch bei den älteren Personen mit 6 bis 4% bei den 55 bis 84jährigen noch einen relativ großen Anteil hat (siehe Abb. 1). Die Grafik zeigt auch, daß das dominierende Verkehrsmittel bei den Personen ab 65 Jahren das „Zu Fuß-Gehen“ ist. Die Bedeutung des KFZ-Verkehrs nimmt ab 55 Jahren mit zunehmendem Alter ab. In Zukunft ist zu erwarten, daß sich durch einen höheren KFZ- und Führerscheinbesitz der älteren Personen der Anteil des MIV in den Altersklassen ab 65 Jahren stark erhöhen wird.

Abb. 1: Verkehrsmittelaufteilung nach Hauptverkehrsmittel und Altersklassen (Basis: werktäglicher Personennormalverkehr der steirischen Wohnbevölkerung 1995)



Die von den Personen zurückgelegten Wegentfernung mit allen Verkehrsmitteln sinken ab 55 Jahren mit zunehmendem Alter stark ab (siehe Abb. 2). Der Aktionsradius schränkt sich mit zunehmendem Alter ein. Die Ergebnisse unterstreichen die Bedeutung einer funktionierenden Nahversorgung für ältere Menschen und die Notwendigkeit, ein gutes Angebot an nichtmotorisierten und öffentlichen Verkehrsmitteln zur Verfügung zu stellen. Eine Förderung des Fahrradverkehrs würde in diesen Altersgruppen eine Möglichkeit zur Aufrechterhaltung eines größeren Aktionsradius mit einem umweltfreundlichen Verkehrsmittel bieten.

Abb. 2: Mittlere Tageswegeentfernung nach Altersklassen und Geschlecht in km (Basis: werktäglicher Personennormalverkehr der steirischen Wohnbevölkerung 1995 ohne nicht mobile Personen)



- Ausbau von Radwegen und Radrouten allgemein
- Radfahrstreifen an Kreuzungen
- Verbesserung des Straßenzustandes
- Kontrolle der zulässigen Fahrgeschwindigkeiten des KFZ-Verkehrs

Als Ergebnis werden Richtlinien für eine seniorengerechte Organisation und Infrastruktur des Fahrradverkehrs vorgestellt. Die Verbesserungsvorschläge orientieren sich an den von älteren Menschen genannten Vorschlägen:

- Erhöhung der Verkehrssicherheit durch Verringerung der Gefährdung durch den KFZ-Verkehr;
- Schulungen im täglichen Umfeld zum Wiedereinstieg für ältere Menschen, Mobilitätsberatung z.B. in Seniorenzentren;
- Ausbau der Fahrradinfrastruktur (Radrouten, Radwege);
- Mehr Rücksicht von KFZ-Lenkern auf Radfahrer.

Besondere Bedeutung für ältere Menschen hat eine Verbesserung des subjektiven Sicherheitsgefühles beim Radfahren, das durch Hardware-Maßnahmen wie verbesserte Infrastruktur sowie bauliche Verkehrsberuhigung und andererseits durch Software-Maßnahmen wie Schulungen und Mobilitätsberatung sowie eine Verbesserung der Rücksichtnahme durch KFZ-Lenker (Verkehrsberuhigung im Kopf) erreicht werden soll.

Naturgemäß stellt das Fahrrad höhere Anforderungen an den Gesundheitszustand als das „Zu-Fuß-Gehen“. Dadurch gibt es Grenzen für das Fahrrad als Alternative für ältere Menschen, abhängig vom Gesundheitszustand der jeweiligen Person. Das Fahrrad kann aber einen großen Beitrag zu einer Sicherstellung einer ausreichenden Mobilität der älteren Personen liefern und ihren Aktionsradius gegenüber dem „Zu-Fuß-Gehen“ wesentlich erweitern.

SAFE ROUTES TO SCHOOL

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SAFE ROUTES TO SCHOOLS

School escort trips are now the fastest growing sector of car traffic growth in the UK. As part of its new integrated transport strategy, the UK Government has highlighted the school journey as an area for action with the full support of Transport, Environment, Health and Education ministers. This paper will explore some of the reasons why Safe Routes to Schools has become such a popular campaign, it will demonstrate the enormous potential for increasing cycling to school and will concentrate on practical examples of how young people have played an active role in improving the environment and community in which they live.

SICHER MIT DEM FAHRRAD ZUR SCHULE

In Großbritannien stellt die Beförderung von Kindern zur Schule mittlerweile der am schnellsten wachsende Sektor des PKW-Verkehrs dar. Als Teil ihrer neuen integrierten Verkehrsstrategie hat die britische Regierung den Schulweg mit voller Unterstützung der Verkehrs-, Umwelt-, Gesundheits- und Unterrichtsminister als einen jener Bereiche, in denen Handlungsbedarf besteht, in den Vordergrund gerückt. Das Referat beleuchtet einige Gründe für die Popularität der Kampagne „Safe Routes to Schools“ und demonstriert das enorme Potential für einen verstärkten Gebrauch des Fahrrads für den Weg zur Schule. Ein weiterer Schwerpunkt wird auf praktischen Beispielen liegen, die zeigen, wie junge Menschen in Bezug auf die Verbesserung ihrer Umwelt und der Gemeinschaft, in der sie leben, eine aktive Rolle gespielt

VARNE POTI V ŠOLO

Spremljanje otrok v šolo je trenutno najhitreje rastoči sektor rasti avtomobilskega prometa v Veliki Britaniji. Angleška vlada je v sklopu svoje nove strategije integriranega prometa poudarila pot v šolo kot področje, ki mu bodo ministrstva za transport, okolje, zdravje in vzgojo nudila vso podporo. Referat bo raziskal nekatere razloge za popularnost dejavnosti za varne šolske poti, prikazal bo tudi ogromen potencial za povečanje kolesarjenja v šolo in se bo osredotočil na primere, kako imajo pri tem mladi pomembno vlogo pri izboljšanju okolja in prostora, kjer živijo.

SAFE ROUTES TO SCHOOL

1.0 INTRODUCTION

The UK now has a new integrated transport strategy which aims to bring together the needs of different transport users and establish a safe, efficient and sustainable transport system. This strategy recognises the part that walking and cycling can play, particularly for short urban journeys and those linking with longer trips by public transport. Pro cycling and walking policies are now being drawn up across departments including Health, Education and Employment as well as Environment and Transport. There is an understandable concern however, that promoting 'vulnerable' modes of travel, in what for many is still a car-dominated environment, could be both irresponsible and naive. Nowhere is this fear more prevalent than when it concerns young people and yet, this is the very age group where most of our efforts should be focussed.

2.0 GOVERNMENT POLICY AND YOUNG PEOPLE

As part of its transport strategy, the Department of Environment, Transport and the Regions (DETR) has set out to reduce the number of children being driven to school (1,2) in order to reduce peak hour traffic congestion, improve children's

health, fitness and independence, develop necessary road skills, and reduce car dependency in future years. There is a specific target within the National Cycle Strategy to double levels of cycling to school. The DETR have also commissioned a study of best practice guidance for School Transport Plans. At the same time, the Department of Health has highlighted the importance of establishing regular physical activity (3) amongst young people in their White Paper on Public Health. The Health Education Authority (HEA) and Department for Education and Employment (DfEE) are preparing guidance to schools, local education authorities, and health promotion agencies and establishing a Healthy Schools Award, both of which will encourage more walking and cycling to school and for other daily journeys. (4,5)

These are ambitious objectives in the light of existing transport trends. In Britain the main means of travelling to school is by foot (53% of all journeys) but this figure is declining each year. Over one quarter of British children travel to school by car, a figure which has more than doubled since the mid 1970's (6). It is calculated that the 'school run' is responsible for up to 20% of morning peak hour traffic. In many primary schools (5 to 10yrs), perhaps half the children arrive by car with many parents travelling less than 1km. Like walking, cycling to school is in decline and less than 2% of British schoolchildren currently cycle to school (7).

In terms of children's fitness, a recent survey showed that less than one in twenty children were taking even the minimum regular exercise required to maintain fitness defined as three twenty minute periods of exercise per week (8). Whilst accident rates across all travel modes have fallen in recent years, walking and cycling are still dangerous for young people in the UK when compared with many of our European neighbours.

3.0 SAFE ROUTES TO SCHOOL

Recognising these concerns, Sustrans - the civil engineering charity coordinating the National Cycle Network, established the Safe Routes to Schools Project in the summer of 1995. Safe Routes to Schools is a national demonstration project, which has been part funded by Sustrans, a number of charitable trusts, the Department of the Environment's Environmental Action Fund and the National Lottery Charities Board. Sustrans is working in partnership with four local authorities:- City of York Council; Colchester Borough Council; Leeds City Council; and Hampshire County Council; seeking to establish safe routes to three schools and colleges in each area, and one school in Leeds.

Alongside the demonstration project, Sustrans provide an information service including free information sheets, a quarterly newsletter, technical guidelines, teaching resources and an advice service to assist projects being set up elsewhere.

The demonstration project aims to encourage children to walk and cycle to school. This is being achieved through improved routes, better bicycle security, environmental education and a programme of awareness-building within the schools. By adopting a cross-curriculum approach compatible with the National Curriculum, awareness of transport, health and environmental issues is being raised within the schools. Enthusiasm is vital and Sustrans approach has been to encourage schools and pupils to participate in the process of change in the hope that this will inspire changes in travel behaviour. At the same time there is recognition that the primary role of a school is to educate its pupils and that teachers have little time available outside their existing teaching commitments.

4.0 INITIAL SURVEYS

Sustrans surveys (9) and others by local authorities have consistently shown that children and young people in the UK are not able to travel as they wish to. Across the pilot schools, Sustrans has discovered that between 30% and 70% of schoolchildren aged 9 to 13 would like to cycle incurring likely transfer from all modes including car travel. These 'preferred mode' figures correlate closely with 'actual' travel for the school journey in Denmark and the Netherlands, (10).

Apart from traffic danger, the main reasons given by pupils why they do not currently cycle to school include:

- 1) School policies which prohibit cycling to school
- 2) Fear of cycle theft
- 3) Lack of locker space for books, helmets, sports equipment etc.

- 4) Poor image of walking and cycling amongst peer group
- 5) Parental pressure
- 6) Distance to school

Pupils have been asked to plot their routes to schools and indicate locations they perceive as being hazardous. By combining this information with plans of accident locations, local authorities have been able to draw up proposals to make the road environment safer.

5.0 PROJECT INITIATIVES

The project has had to be flexible in choosing what solutions were right for individual schools. The following initiatives are indicative of the work which has been done.

School Exchange. In 1996 and 1997, six parties of schoolchildren visited exchange schools in Odense, Denmark to see a highly successful safe routes to schools project for themselves. The British youngsters experienced a radically different traffic environment to the ones they were used to and became eloquent 'experts' on how to improve road safety. They presented their findings and recommendations to planners, teachers and politicians on their return. Schools have been delighted that their pupils have become closely involved in a project with clear community benefits, establishing links with local decision makers and other European schools at the same time. Politicians have reported that the presentations formed one of the best public consultation exercises with which they had been involved.

Safe route measures. A wide variety of route improvements were put forward by pupils. In most cases, there was not the budget or the space available to provide separate cycle paths off the road which is common practice in Denmark. For this reason, most of the safe routes work has concentrated on reducing vehicle speeds along the major school routes.

When lower speed limits are adopted and enforced on an area wide basis as in Graz, Austria, there is strong evidence that levels of cycling will increase (11). In the UK, speed limits on their own have not proved to be particularly effective. Following trials of 20mph speed limits outside schools, it was found engineering measures such as speed cushions and speed tables were needed and these have been incorporated at several schools.

The experience in York shows that cycling can be encouraged along traffic calmed roads, whilst at the same time reducing accidents (12). This may in part be put down to provision of walking and cycling infrastructure but it also follows that safety has improved as a result of i) more recognition from drivers that cyclists are likely to be present, ie. the critical mass argument and ii) more drivers understand the needs of cyclists and pedestrians because they use those modes themselves.

Some of the safety measures which have been installed include:

- Safe crossings
- Cycle lanes
- Parking restrictions
- Traffic calming
- and 20mph (30kph) zones

Cyclist training. Since children are being encouraged to cycle in traffic, it is most important that they are taught strategies for identifying hazards in advance, riding safely and understanding car driver's actions. Pedestrian and cyclist training schemes are now well established in the UK. These have been shown to be most effective when taught in the road environment. Research has shown that knowledge, safety skills, and use of safety equipment such as helmets, has improved as a result of such training (13). Safety training should be linked to school policies which promote walking and cycling to school. One way of setting out such a policy is through cycle parking permits which establish rules to encourage safe and responsible cycling to school.

Classroom Work. There are opportunities to promote walking and cycling across the national curriculum whether it be by analysing survey data in maths and computing, discussing health issues in personal, health and social education, plotting routes to school and developing mapping skills in geography, or exploring improved cycle storage design in art and technology classes.

An excellent programme of work in geography is taught each year at Horndean School in Hampshire. Pupils plot where they live, their travel mode and routes to school on digital computerised maps of the area. Using this data, the class then devise a range of

measures to improve safety along routes to school.

Cycle Storage. The need for a new bike storage facility in many schools presented an opportunity for art students to create a visual focus which would raise the image of cycling amongst pupils. Sustrans commissioned several artists to work with art and design pupils on this theme. This project has been successful on a number of counts: curriculum project work led by outside practitioners has appealed to teachers and pupils alike; artists have been able to discover the real needs of youngsters and have generated ideas of direct relevance to pupils; and, by collaborating with school architects and engineers, several unique structures are now contributing to a safe and secure journey to school.

Cycle Policies. Many schools will not permit cycling to school for safety and security reasons. It was found that schools were not entitled to ban cycling to school but they could prevent children from bringing bikes into the school grounds. A document called a cycle parking permit was needed which set out the legal responsibilities of the school, pupils and their parents. This permit would also include rules for pupils wishing to cycle to school. At the Sustrans pilot school in Leeds where 59% of pupils expressed a desire to cycle to school, the Headteacher has agreed to lift the ban on cycling by asking that the following initiatives are completed first:

- i) Cycle permits are issued to those pupils who have received on road training and who agree to sign up to the permit rules
- ii) The school provides secure cycle parking for 100 bikes
- iii) Traffic calming measures and new signal crossing are installed outside the school.

6.0 PROJECT OUTCOMES

There have been positive outcomes at all of the pilot schools. These include:

- increase in numbers cycling to school
- reduction in car trips
- no accidents to date on school journeys
- changes in school policy on cycling
- wide support from schools and parents

These results will be reported in more detail as part of the Project's 'After' study which is planned to take place in 1999.

7.0 THE FUTURE

It is likely that many schools will be encouraged to write their own school travel plan as part of five year Local Transport Plans and Road Safety Strategies for the local area. Local authorities will be required to show how they intend to influence the journey to school and make school journeys safer. Furthermore they will need to show evidence of these changes in line with the national walking and cycling strategy targets.

Education departments are now expected to revise their school admissions policies to take account of parents preference for schools. Problems encountered in meeting parental choice mean that there will be increased pressure to guarantee pupils, as a minimum, places at the school closest to where they live. This should have the effect of reducing the average distance travelled to school.

Local authorities have been asked to encourage more local democracy and citizenship. Many local authorities are now consulting with young people and establishing youth councils to shadow the work of the full council. In York, young people have asked for high priority to be given to their transport needs, particularly in relation to provision of safe and affordable access to leisure facilities and further education institutions in the city (14).

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ENCOURAGING FAMILY UTILITY CYCLING

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ENCOURAGING FAMILY UTILITY CYCLING

Several recent government initiatives in the UK attempt to encourage cycling. One potential group of cyclists appears to have been overlooked: families with children too young to cycle unaccompanied (usually under 11 years of age) who undertake a series of short local journeys by car each day, for example, to kindergarten, shops and schools. Such journeys could easily be taken by bicycle given the right conditions.

Car manufacturers target 'family' and female consumer groups, using images of children travelling 'safely' by car in advertising. Bicycle planners and campaigners often concentrate on commuter and leisure cyclists, ignoring shopping and childcare trips.

Infrastructure, service and encouragement measures can facilitate cycle use by families with young children for everyday journeys. Education and training, design of facilities and planning of neighbourhoods can all make a difference.

FÖRDERUNG DES FAHRRADS ALS ALLTÄGLICHES VERKEHRSMITTEL DER GANZEN FAMILIE

In jüngster Zeit wurden von der britischen Regierung mehrere Initiativen gesetzt, um den Gebrauch des Fahrrads zu fördern. Eine potentielle Gruppe von Radfahrern scheint man dabei übersehen zu haben: Familien mit Kindern, die noch zu klein sind, um unbeaufsichtigt Fahrrad zu fahren (normalerweise unter 11), die täglich mehrere kurze Autofahrten beispielsweise zum Kindergarten, zum Einkaufen oder zur Schule absolvieren. Solche Fahrten könnten, sofern man

die richtigen Bedingungen schafft, leicht mit dem Fahrrad bewältigt werden.

Die Autohersteller wenden sich an die „Familie“ und an weibliche Verbraucher und zeigen in der Werbung Kinder, die „sicher“ im Auto gefahren werden. Bei der Planung des Fahrradverkehrs und bei Kampagnen zur Förderung des Radfahrens konzentriert man sich hingegen oft auf Pendler und Freizeitradfahrer und vernachlässigt Einkaufsfahrten oder Fahrten zu Kinderbetreuungseinrichtungen oder zur Schule.

Infrastruktur, Dienstleistungen und Förderungsmaßnahmen können Familien mit kleinen Kindern den Gebrauch des Fahrrads für ihre täglichen Fahrten erleichtern. Erziehung und Ausbildung, die Konzeption von Einrichtungen sowie die adäquate Planung der lokalen Umgebung können den Unterschied machen.

VZPODBUJANJE DRUŽINSKEGA UTILITARNEGA KOLESARJENJA

Številne nedavne vladne iniciative v VB poskušajo spodbujati kolesarjenje. Zdi se, da so spregledali eno od potencialnih skupin kolesarjev: družine z otroki, ki so premladi, da bi lahko kolesarili brez spremstva (po navadi pod 11 let), ki opravijo mnoge kratke lokalne prevoze z avtom vsak dan, na primer v vrtec, trgovino in šolo. Takšne poti bi z lahkoto lahko opravili s kolesom, če bi imeli prave pogoje.

Proizvajalci avtomobilov v svojih oglasih ciljajo na "družinsko" in žensko potrošniško skupino, tako da uporabljajo podobe otrok, ki "varno" potujejo z avtom. Proizvajalci in oglaševalci koles se običajno koncentrirajo na tiste, ki kolesarijo v službo ali za zabavo, ignorirajo pa poti po nakupih in za vožnjo otrok.

Infrastruktura, služba in ukrepi spodbujanja lahko pripomorejo k uporabi koles v družinah z majhnimi otroki za vsakodnevne opravke. Poučevanje in vzgajanje, oblikovanje možnosti in načrtovanje okolišev lahko veliko spremenijo.

ENCOURAGING FAMILY UTILITY CYCLING

INTRODUCTION

There have been many initiatives in the UK in recent years to encourage more cycling, including a National Cycling Strategy (NCS) which aims to double cycle use by 2002 and double it again by 2012. Others include the National Cycle Network and Safe Routes to Schools activities of Sustrans, a charitable organisation which attempts to promote cycling as a form of sustainable transport. Sustrans' main achievement is the creation of a nation-wide network of high quality 'safe' leisure routes. It is envisaged that leisure routes will attract non-cyclists to try cycling, and that weekend leisure cyclists will eventually use bicycles as transport. Most major towns and cities have now prepared local cycling strategies which encompass the ideas above.

There is sadly little evidence of an increase in the number of bicycles as a proportion of all traffic. Any growth in cycling appears to have been outstripped by the growth in car use. Despite this, some school and employer based projects have achieved considerable success, especially where infrastructure improvements have been complemented by efforts to create a 'cycling culture'.

One of the main increases in car based travel is for 'escort' journeys. These are journeys undertaken purely to transport a passenger (usually a child) to an activity such as school, sports or kindergarten. The (mainly) women who make these trips are seen as a growing market by car manufacturers. Unlike journeys to schools and employers, parents caring for young children are likely to undertake a series of short journeys to many different destinations throughout the day. This makes them harder to target as a group. Use of the car to transport children to pre-school activities or childcare becomes an established pattern, likely to continue when children start school, undermining efforts to encourage cycling among older children and adults. It is therefore important to establish the cycling culture throughout the population, including those with young children.

Most local cycling strategies address three main types of cyclist and journey:

- Unaccompanied adult commuter cyclists travelling to a city centre or transport interchange. Employer-based green travel plans.
 - Journey to school (usually secondary (children aged 11-16 years) schools only, since it is thought too dangerous for younger children to walk or cycle unaccompanied!)
- Targeting these two groups is seen as most likely to reduce peak hour traffic congestion.
- Leisure cyclists are also targeted as a way to attract new cyclists and to stimulate tourism. This is usually through provision of 'traffic free' routes.

Strategies and facilities often fail to address the needs of families with babies and children who are too young to ride their own bicycle. As a result, new cycle facilities can actually exclude this group of vulnerable road users. Measures to provide for family cycling can be built into planning and engineering guidelines, and measures to encourage family cycling may be undertaken by employers, retailers, cycle traders and health providers.

PLANNING

There are general principles in town planning which are of benefit to all cyclists. These concern easy access to schools, shops and employment from residential areas. During the 1980s, 'out of town' developments were constructed, leading to long, complex journeys which cannot be easily undertaken by bike or public transport. Developments, including housing, are often located on major roads where cycling is dangerous or even prohibited by law. The legacy of this approach is a lifestyle centred around the car.

Recent legislation has attempted to reverse this policy and reduce the need to travel, encouraging redevelopment of inner city sites in preference to greenfield sites. Some cities, such as Edinburgh and Oxford have car-free housing developments located close to the city centre, linking to a network of cycle routes. Others are experimenting with 'Home Zones' where traffic calming and landscaping improves the safety and appearance of residential areas. Reducing journey length by locating housing close to schools, shops and the workplace facilitates cycle use, especially for cyclists escorting children. The social benefits to children of car free housing are significant.¹

INFRASTRUCTURE

Most available guidance recommends the approach of reducing the speed and volume of motorised traffic, and reallocating road space to cyclists and pedestrians, as exemplified in Graz as the ideal solution. 'Guidelines for Cycle Friendly Infrastructure'² recommends sharing facilities with pedestrians only as a last resort when no other solution is available. On-carriageway facilities are preferred by the majority of existing cyclists, and are usually more convenient and direct than segregated facilities. Sub-standard on-road facilities may not enhance the safety of existing cyclists or attract new cyclists. Safety is important to parents who wish to carry children by bicycle.

Political pressures, fears of increased congestion and often a lack of experience of cycling by practitioners results in an unwillingness to adopt the Graz approach. Instead, cycle facilities in the UK are typically former footpaths, footways and canal banks shared with pedestrian traffic. This type of facility is widely thought to be more safe than the road network, but may result in conflict with pedestrians, and bicycle/car crashes at side roads. Badly designed shared-use facilities which are not readily differentiated from the rest of the footway network can lead to widespread pavement cycling.

Using shared paths is problematic for those carrying children on non-standard bicycles, particularly using trailers and tandems. They are often prevented from using traffic-free paths due to poor design. There are a number of items to consider:

- Path width
- Barriers
- Intersection, corners and turning radii

¹ Car Free Housing, One step towards a sustainable city, Ralph Herbertz, Velo-City Conference Proceedings, Barcelona 1997

² Guidelines for Cycle Friendly Infrastructure, CTC/IHT, 1996

DIMENSIONS OF 'STANDARD' AND CHILD CARRYING BICYCLES

Transporting children by bicycle requires the use of a child seat fitted to a standard cycle, suitable for carrying one child up to

approximately four years of age, or a trailer, tricycle, tandem, or other device for carrying two or more children. Trailers are particularly suitable for utility cycling as goods can be easily carried. Some designs of child seat reduce the luggage carrying capacity of the bicycle, which is an important consideration for shopping trips. Approximate dimensions of the most popular child-carrying combinations are set out below, although this list is by no means exhaustive. Less common combinations such as sidecars and trailer bikes designed to carry two children are available but not in such wide usage.

Table 1: Dimensions of 'non-standard' bicycles

Cycle Type	Length (m)	Width (m)	Height (m)
Solo Cycle	1.8	0.6	0.9-1.2
Solo Cycle & childseat	1.8	0.8	1.5-2.0
Solo & Trailer	3.2	0.95	1.2
Solo & trailer bike (Rann Trailer)	3.2	0.6	0.9-1.2
Tandem	2.8 - 3.0		
Tandem & Trailer	4.2	0.95	1.2
Tricycle	1.8 - 2.0	0.7 - 1.0	0.9 - 1.2

PATH AND LANE WIDTH

Sustrans guidance³ for construction of the National Cycle Network recommends a minimum path width of 2.5m, and a preferred width of 3.0m. Unfortunately such widths are rarely available in the UK, and shared-use paths of 1.0m and 1.5m width are commonplace. A child cycle trailer is 0.95m wide, (as is a double pushchair) and it is impossible to use many of these 'safe' routes without inconvenience to others.

We would strongly advocate that traffic free paths, both shared and fully segregated from pedestrians should have an absolute minimum path width of 2.0m (wider if bounded by a wall or fence). If this is not available, a parallel on-carriageway route should be provided.

Where on-road cycle lanes are provided, they need to be at least 1.2 metres wide to enable a trailer to be passed safely, with a preferred width of 1.5m. Many roads in Britain are 7.2m wide or less, which makes wide cycle lanes unfeasible. Some lanes in London are only 0.7m wide⁴, narrower than a trailer, and a width of 1.0m is common in other towns and

³ National Cycle Network, Guidelines and Practical Details Vol 2, Sustrans/Ove Arup 1997

⁴ London Cycle Network Design Manual, 1998

cities. There is some evidence that narrow cycle lanes lead to increased accidents. Some guidance recommends a lane width of 1.5m or above, and a reduction in the speed limit. The normal UK urban speed limit is 30 mph (48kph) although this is exceeded by around 70% of all motorists⁵. Good quality wide cycle lanes, area wide speed limit enforcement and reduction in speed limits near to schools and in residential areas can help to stimulate family cycling.

BARRIERS

Almost every segregated facility away from the highway is protected by barriers. Barriers are installed to exclude motorcycles. Other barriers are introduced at subways, gradients, bridges and intersections with poor visibility splays in order to slow or stop cyclists. Almost every barrier design prevents access by trailers and tricycles. Some can be overcome by lifting bicycle, trailer and children, but this is clearly unfeasible for a solitary parent, and unacceptable on a daily journey. Family cyclists are often forced to use the road network, even where a segregated facility is available to other cyclists.

Barriers arranged in a chicane type facility to slow cyclists can be negotiated providing they meet the following minimum dimensions:

Gap Width (across path), 1.2m Gap Length (along path), 2.0m

Access barriers to exclude motor cycles are more difficult to overcome, since they are specifically designed to meet the minimum dimensions of a 'standard' cycle. Sustrans have suggested that barriers be removed where possible, and in areas where potential trouble with motorbikes exists, replaced with a gate alongside the barrier which can be locked if necessary⁶.

Use of barriers excludes many family cyclists, bicycles adapted for disabled users, and some wheelchairs. It is inconvenient for all users, including pedestrians. We recommend that no barriers whatsoever are installed on any part of a cycle route unless there is a recorded problem with accidents or illegal use. Ironically, the route chosen for the launch of Britain's National Cycle Network in June 2000 passes within a few metres of our home but is completely inaccessible to us as a family!

INTERSECTION WITH THE HIGHWAY AND KERB RADII

Narrow paths and access gaps of less than 2.0m can lead to an additional problem where segregated routes or cycle contraflow gaps intersect with the highway. Tandems and trailers are unable to easily turn bends of ninety degrees which are common at these locations.

The problem can be overcome to some extent by increasing the path width, but this may lead to abuse by motor vehicles. Another way to tackle the problem is by increasing the kerb radii to accommodate the increased turning circle required by tandems and trailers. The following table illustrates the minimum inside kerb radius required at 15kph (assuming 2m wide path). It is possible to turn more slowly at radii down to 2.5m but less convenient on utility routes.

Table 2. Minimum kerb radii required for 'non-standard' bicycles

Type of Cycle	Minimum kerb radius at 15kph
Cycle & Trailer	3.0m
Tandem	3.5m
Tandem and Trailer	3.8m

⁵ UK urban speed surveys, DETR 1998

⁶ Sustrans, Barriers and Access Controls, Advisory Leaflet 1998

The requirement for such high quality provision along segregated routes in order to accommodate the specialist bicycles used by family cyclists may lead engineers and planners to reconsider the reallocation of roads as a first resort. If targets for increased cycle use proposed in the NCS are attained, we could face the prospect of bicycle traffic jams on some segregated routes! Delays already occur at barriers on the Bristol - Bath path which often carries 300 cyclists per hour, and could become commonplace on other routes in the near future.

PUBLIC TRANSPORT INTERCHANGE

Access to rail stations and platforms is often only available using steps. Using steps requires leaving a child unattended for some time in order to carry a cycle (or vice versa).

A lift of at least 1.2m x 1.2m is required to accommodate a child carrying bicycle, and larger lifts are preferred. These are often available to staff to move post and parcels, but not to passengers. Wheeling channels up the side of steps are of limited benefit to cyclists with either children or luggage due to the laden weight of the bicycle. Some train operators offer an escort service to assist disabled passengers. This should also be available to passengers travelling with bicycles and children. The availability of staff who are able (and willing) to help cyclists is of great benefit when travelling with children.

EMPLOYERS

Making a journey to a kindergarten or childminder before and after work can be time consuming. Workplace crèche facilities are uncommon in the UK, although they are available at some government establishments and larger employers. The Ministry of Defence Procurement Headquarters near Bristol provides a 100 place crèche and cycle parking for over 500 bicycles. Around 10% of the workforce travel by bicycle. This environmentally friendly building is being seen as a model for other government establishments. A crèche at or close to the workplace enables a single journey to be made, facilitating bicycle use or walking.

RETAILERS AND TOWN CENTRES

In the face of increased competition, and sometimes as a result of pressure from local authorities, retailers and town centre managers are now investigating ways to attract customers without increasing the number of car journeys. One method used is home delivery services. Carrying children and shopping can be problematic, and is one of the main reasons given for needing to use a car. A home delivery service enables customers to cycle to the store, select shopping and cycle home to await delivery. A number of major stores in the UK are trialling schemes at present, including internet, fax and telephone ordering. Safeway have an innovative cycle trailer rental scheme at their Totnes store. Sainsburys in Islington, London, offers a pedal powered taxi service!

A second problem when cycling to shops with small children is that it is impossible to carry a pushchair to use to walk around a town centre or store, and so it is necessary to carry children. Cycle parking centres at Groningen in the Netherlands hire pushchairs to customers, and all Ikea stores provide pushchairs for use in store. Other retailers and shopping centres provide childcare facilities as a way to attract customers. This enables those who travel by bicycle to leave children safely and not have to carry them around shops.

BICYCLE STORES AND EQUIPMENT MANUFACTURERS

Few bicycles are designed by or for women, and few cycle shops are owned by or employ women. Some stores and manufacturers are beginning to realise the potential of catering for a wider range of customers, including families. There are now shops dedicated to selling tandems, cycles designed for women, and trailers. Unfortunately these are few. Many bicycle shops do not stock child seats and trailers, and even in those that do, staff often do not have sufficient knowledge to recommend the correct product. This is in marked contrast to the motor trade, where childseats, sunshields, cradles and even specially adapted rear-view mirrors for pregnant women are readily available.

Manufacturers and retailers can improve staff awareness through training and marketing. (This already occurs for other bicycle products such as suspension forks and clothing) Knowledge and availability of child carrying equipment and

correctly sized cycles for women will lead to increased sales and facilitate use.

TRAINING

Cycle training is usually aimed at children aged 8 to 11 years. Some public and private sector organisations, and cycle campaign groups have recognised the demand for adult cycle training. Courses developed by the authors for Southampton City Council include advice on how to transport children. Participants value the support and encouragement offered by trainers in addition to the skills learned.

CONCLUSIONS

Family utility cycling requires provision of good quality infrastructure, and can be actively discouraged by poor provision. The typical pattern of multiple local trips to schools, clinics, shops and kindergarten and lack of space to provide adequate segregated cycle tracks make traffic management and speed reduction the most viable way to provide for family utility cycling. This may also result in social benefits, making streets safer for children to play and travel independently. Efforts to promote a cycling culture through leisure cycling should not exclude family cyclists through careless design. These are the potential future utility cyclists and will be discouraged if their first experience is negative. Employer, retail and public transport initiatives can help to facilitate and support cycling with children and may also be of benefit to pedestrians, wheelchair users and parents with pushchairs. Cycle training for adults builds confidence and ability, and can be used to raise awareness of the feasibility of transporting young children by bike.

"CYCLE LOGIC" - ROTTERDAM'S WORKING EXAMPLE.

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During a career within the Courier Industry, the Author became aware of the potential that Human Power offered. Since 1994, he has been actively promoting Human Powered Solutions to Business.



In early 1997, Cycle Logic became more than just a "cycle-based employment project" when it launched a small fleet of modern and innovative "Human Powered Vehicles" ("HPV" is the general term given to pedal powered vehicles that do not conform to conventional cycle design) to carry out a number of tasks within the city of Rotterdam which would normally require the use of motorised vehicles - e.g.: passenger and cargo carrying.

Now into it's second year, the project is expanding and will next year introduce both new services and more innovative types of vehicles.. The long term goal is to become a European Information Centre (and working example) with regard to the effective use of HPV's within modern city centres.

Anfang 1997 entwickelte sich Cycle Logic über ein bloßes „fahrradbasiertes Beschäftigungsprojekt“ hinaus, als eine kleine Flotte von modernen und innovativen HPV („human-powered vehicles“, allgemeine Bezeichnung für pedalbetriebene Fahrzeuge, die nicht dem konventionellen Fahrradkonzept entsprechen) in Betrieb genommen wurde, um in der Stadt Rotterdam eine Reihe von Aufgaben zu erfüllen, die normalerweise den Gebrauch motorisierter Fahrzeuge erfordern - z.B. Personen- und Güterbeförderung.

Jetzt, bereits in seinem zweiten Jahr, wird das Projekt ausgeweitet. Nächstes Jahr werden sowohl neue Dienstleistungen als auch innovativere Fahrzeugtypen eingeführt werden. Das langfristige Ziel besteht darin, ein europäisches Informationszentrum (und praktisches Beispiel) im Bereich der effizienten Nutzung von HPV in modernen Stadtzentren zu werden.

"Cycle Logic" je v začetku leta 1997 postal več kot le službeni projekt na temo kolesarstva. Takrat je spodbudil majhno floto modernih in inovativnih "vozil na človeški pogon" (HPV - Human Powered Vehicles - je splošno poimenovanje za prevozna sredstva na pedalni pogon, ki se ne podrejajo konvencionalni obliki kolesa). Njihova naloga je bila, v mestu Rotterdam izvesti nekatere naloge, ki bi sicer zahtevale uporabo motornih vozil.

Sedaj, ko teče drugo leto projekta, se ta širi in bo naslednje leto uvedel nove dejavnosti in še inovativnejše vrste vozil. Dolgoročni načrt je, da bi postali Evropski informacijski center (in delujoči primer) za efektivno rabo HPV v okviru modernih mestnih centrov.

CYCLE LOGIC

Since the submission of the initial abstract, there has been a major change in the direction of Cycle Logic. After starting out with a bias towards the tourism aspects of it's business, from 1999, Cycle Logic has decided to switch the major concentration of its efforts over the next two years onto a unique HPV (Human Powered Vehicle) / cargo-cycle development of the "Transferia" concept (a planned interface of passenger transport modes servicing city centres).

The plan is to apply the general Transferia concept directly to inward and outward bound city centre parcel/courier traffic - with final delivery being completed by a fleet of specialist modern HPV's/ cargo-cycles. The initiatives are to be known as "HPV Transferia" (HPVT) and will initially open in two European Cities, one in London, UK and the other in Rotterdam, the Netherlands.

This is how the scheme will operate: Deliveries by motor vehicles (and where possible the Rail network, such as with "Red Star", see below) coming into the city will be dropped off a peripheral ports for transfer to the city centre by HPV (visa versa for outgoing movements). The effect is quite dramatic. An IMMEDIATE reduction in ESSENTIAL motor traffic in the city centre with the resulting IMMEDIATE decreases in congestion, and air/noise pollution. The operation is particularly suitable for business' with offices in more than one city and is also attractive for companies with premises in the hardest areas to reach by conventional motor driven delivery vehicles (i.e. London's West End and City districts). The HPVT will also be attractive to larger courier organisations as a subcontract service for awkward pickups/deliveries and will also operate as a "normal" courier business in its own right.

Cycle Logic's switch of concentration onto the HPVT concept was for four main reasons:

1. The HPV Transferia offers the most opportunity for achievable and sustainable economic development and job generation out of all the Cycle Logic project headings.
2. The lack of problematical legislation required for start up (as opposed to HPV passenger carrying services, which at present, are going through the long winded and problematical process of common legislation definition etc. across Europe).
3. The immediate financial return and commercial stability offered by providing a required and already established service to business.
4. The study of the success in 1998 of a company called "Emission Control" in establishing a new city centre courier operation 90% serviced by HPV's/ cargo-cycles for the Nation-wide "Red Star" Courier Organisation and based at London's Paddington Rail Station.

During the last decade, there has been many words spoken and written about the prospect of "Collectivised Warehousing" and "Breakdown Delivery Systems" for our congested cities, but despite all of this activity, there does not seem to be much visible evidence of such schemes operating successfully in the city centres of Europe. However, despite it having a comparatively small fleet of only six vehicles, the Red Star HPV operation is now widely recognised across London. This is simply because of the vehicles it uses. One of the main aims of the HPVT operations is to be high profile and extremely visible with a fleet of up to 20 of the most modern and efficient HPV's from Europe and the USA taking to the streets in the first few months. The message has got to get across from the very start. The HPV Transferia is no "eco gesture" it is a dynamic and competitive business as well as offering the host city an effective way of reducing vehicle miles, congestion and pollution within its centre.

The biggest "criticism" to-date of the potential of the concept offered by unqualified observers seems to be that you could easily do the Transferia with conventional motor vehicles - or if you want to be seen to be "green", electric vehicles. There are two main reasons the HPV Transferia has advantages over these two aforementioned contenders.

1. Operational Efficiency.
2. Cost savings.

Only those with privileged information gathered from studying the logistic details of the Red Star HPV operation will know just how competitive the HPV/cargo-cycles are against conventional motor vehicles within the inner city delivery area. Before the HPV unit at Red Star, all the West End and City deliveries/pick ups were done by van. These jobs are now carried out by the HPV fleet with no time or efficiency deficit to Red Star, in fact, the opposite is true. The vast majority of rush hour jobs are guaranteed quicker by HPV than by van. The fears about the lack of the HPV's capacity (both in terms of weight and bulk) are also laid to rest very quickly when investigated. Less than 10% of the total jobs being dispatched are presently not possible by HPV and this situation is countered by sending more than one vehicle. Of the remainder, less than 2% of jobs would not be possible at all by HPV - i.e. because the package is simply too large to be accommodated by one of the HPV's used - for example, a 2.5 metre long package. In reality, this type of job is extremely rare and the majority of parcels are letters, small packages and parcels up to 30kg.

One further advantage of the HPVT fleet is that their vehicles are legally allowed to use both the road and cycle paths. The excellent network of cycle paths in Rotterdam and the current planned increase in cycle paths in London are key advantages in a gridlocked city centre at rush hour. One final advantage worth mentioning is the lack of problems encountered when parking HPV's for loading/unloading. Not only do they offer true "door to door" service, but as "non-motorised vehicles", they are not susceptible to parking tickets or fines. Parking problems are not only time consuming, but very expensive to motorised delivery operations (costing over £100.00 per offence in some cases in London). This leads us very nicely into the cost savings of the HPV operation over the motorised one.

The cost savings of the HPV operation over the motorised versions are more than one would perhaps imagine at a glance. Firstly, the HPV fleet requires no registration, no road tax and no Mot test. The vehicles also have no gasoline or diesel fuel requirement and use no heavy consumable oils (i.e. engine oil). With regard to fuel, it is now common knowledge that motor vehicles are at their most un-economic (and polluting) when used in congested situations such as city centre London. The HPV fleet also has a far lesser servicing requirement/cost in comparison to the motorised fleet. There are less costly consumables (engines, clutches, etc) and less specialist tools required to carry out the services. The HPV fleet is cheaper to buy initially and also has the nowadays unusual and sustainable advantage of being able to be completely renovated at the end of a certain service period (in a similar fashion to the way the old Red London Routemaster Bus used to be completely rebuilt and sent out again as a new bus). This situation ensures an extremely long, productive and cost effective working life.

The HPVT fleet is made up of the best available cargo cycles from the UK (The BROX cargo quadricycle), Germany (the AnthroTech Recumbent Trike) and the USA (the Long Haul two wheel cargo cycle). These vehicles can carry loads of up to 150kgs and have all proven their mettle in service over the last five years in many delivery companies throughout Northern Europe and the USA. They are supplied to the Transferia by Wheels Within Wheels Ltd (suppliers of specialist cargo cycles and HPV's to business) from the UK who also give technical assistance and back up to the projects. With the aforementioned business strategy and competitive advantages, the HPVT has no problem meeting the criteria for economic development, however, the subject of Job creation is just as important to Cycle Logic as can be seen in the paragraph below.

Initially, there will be positions in Operations (riders and dispatchers/controllers), Vehicle Maintenance, Marketing and Sales. There will also be a focus on working with the job creation agencies in both the Netherlands (Job Plus) and the UK (New Deal). Both schemes have a target of finding work for the long-term unemployed which offer tangible positions at the end of a trial period. HPVT will offer flexibility in the form of both full time and part time vacancies to its staff. The more peripheral ports, the more jobs created. After physically proving the project works efficiently and viably, the HPVT concept will then be offered to other European Cities as a consultancy package by Cycle Logic. Obviously, any expansion means the creation of more jobs Europe wide

Finally, there is a large part to play in the continued success and spread of the HPVT concept by Local Municipalities, City Councils and the Local Chambers of Commerce. When an efficient distribution system like the HPVT can be proven to offer a distribution service that offers large benefits to the city as a whole, the local authority should give support to the venture in the form of assistance with routes etc - after all, the local authority has the power to facilitate and assist the HPVT by adjusting the physical infrastructure in its role as highway manager. More stimulatory measures such as regional agreements between neighbouring municipalities (especially relevant in London) to assist in through routes for the HPVT can make a very large difference for a fraction of the cost of accommodating motorised vehicles route demands (for instance, cycle traffic can use quieter narrower streets without detriment to the local environment). Planners should also be aware of the HPVT and consider HPV traffic when planning any new facility (things like "the swept path" of HPV's require a little more planning for and the minimum width of future paths should reflect their use, just a couple of extra cms width can make the difference between practical and impractical for use by a HPV).

In addition to stimulatory measures, the Local Authority can also implement restrictive measures for motorised vehicles such as concentration on illegal parking in cycle lanes and traffic measures which have repercussions for the though flow of supply traffic such as setting limits for loading and unloading times on public roads. Of course, the Local Authority should also become a customer of the HPVT and (as part of Local Agenda 21 commitments) should insist that any of its own parcel movements that can be carried out by the HPVT (as opposed to using motorised methods) is dispatched by them. It is fairly obvious that if the above measures were carried out by Local Authorities, they would prove a significant help to the HPVT - however, it is important to point out that the HPVTs will start working in 1999 without any such measures in place and that they are not dependant on assistance from the Local Authorities in order to viably and successfully operate.

Last but not least, the Chamber of Commerce can promote the use of the HPVT by its members. All members could inform their own customers of the initiative and If every member of the C.O.C gave just one job per year to the HPVT, the contribution would be significant (just one of the London C of C's has over 3,000 members alone!).

By the time this paper is presented, the London HPVT will be operational in its first phase. In both the Netherlands and London, the HPVTs will stand as working examples of what can be achieved. They can be visited by Cities or individuals interested in setting up their own initiatives and will provide the best example possible, one that has done what it said it would do, not simply spoken or written about what it could do.

TUESDAY



HUMAN POWERED DELIVERY, SUSTAINABLE COMMUNITY DEVELOPMENT

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HUMAN POWERED DELIVERY, SUSTAINABLE COMMUNITY DEVELOPMENT

For many years cycle planning has looked at how to effectively and safely move cyclists about the city center and beyond. It is also very important to look at how goods (and services) are moved in the same areas. In the following paper I will be discussing three main points of Human Powered Delivery (HPD), their importance, and how they can be implemented into a city's cycle infrastructure. The first point of HPD development is to encourage businesses to use the bicycle to deliver their goods and services to the people. Many people remember the past of the local baker or grocery boy delivering their goods by bicycle and this method of transport is essential to the future of sustainable urban development as well. Secondly, we will look at businesses that provide a Human Powered Delivery Service (HPDS) to government, businesses, and the community. Though the cycle courier has existed for many years they have mostly been used for small packages and letters. However, with the ever increasing cycle technology and desire to move more goods by sustainable modes, many HPDS's have been created around the world, with many operating in the U.S.A. today. These companies are moving cargo from 10g to 100+kg every trip, and the idea of "one less car" on the road is becoming a reality. Finally, it is important to look at the private individual's use of the bicycle for transport of their own goods. Whether it is bringing the children to daycare, doing the shopping, or even moving house, we should not limit ourselves to using the bicycle solely to transport ourselves but expand ourselves to the idea of moving our goods by human power.

GÜTERBEFÖRDERUNG AUF HPV-BASIS, NACHHALTIGE GEMEINSCHAFTSENTWICKLUNG

In der Fahrradverkehrsplanung hat man sich viele Jahre lang darum bemüht, den Radfahrern eine sichere und effiziente Fortbewegung im Stadtzentrum und darüber hinaus zu ermöglichen. Es ist aber auch sehr wichtig, zu betrachten, wie Güter (und Dienstleistungen) in den gleichen Bereichen befördert werden. Ich werde die drei Hauptpunkte im Zusammenhang mit der Güterbeförderung auf HPV-Basis sowie ihre jeweilige Bedeutsamkeit diskutieren und besprechen, wie eine Güterbeförderung auf HPV-Basis in die Fahrradinfrastruktur einer Stadt integriert werden kann.

Der erste Punkt im Hinblick auf die Entwicklung eines HPV-basierten Güterbeförderungswesens besteht darin, die Unternehmer zu ermutigen, zur Auslieferung ihrer Güter und Dienstleistungen das Fahrrad zu verwenden. Viele erinnern sich noch an den Bäcker vor Ort oder an den Jungen aus dem Lebensmittelladen, die Lieferungen mit dem Fahrrad ausfuhren. Diese Güterbeförderungsmethode ist aber auch für die Zukunft einer nachhaltigen Stadtentwicklung von grundlegender Bedeutung. Zweitens werden wir Unternehmen betrachten, die für Regierung, Unternehmen und die Gemeinschaft HPV-basierte Güterbeförderungsleistungen erbringen. Den Fahrradboten gibt es schon lange, doch beschränken sich dessen Zustelldienste zumeist auf kleine Pakete und Briefe. Mit der fortschreitenden Entwicklung der Fahrradtechnologie und dem wachsenden Wunsch nach nachhaltigen Güterbeförderungsmethoden wurden auf der ganzen Welt zahlreiche HPV-basierte Zustelldienste eingerichtet, viele davon in den USA. Diese Firmen befördern pro Fahrt Frachten von 10 g bis 100 kg und mehr, und die Idee „Ein Auto weniger auf der Straße“ wird zur Realität. Schließlich ist es noch wichtig, darauf zu achten, daß Privatpersonen das Fahrrad als Beförderungsmittel einsetzen. Ob man die Kinder zur Tagesstätte fährt, Einkäufe erledigt oder sogar umzieht - man sollte sich nicht darauf beschränken, das Fahrrad lediglich als persönliches Fortbewegungsmittel zu verwenden, sondern seinen Horizont erweitern und muskelfortgetriebene Fahrzeuge auch für die Güterbeförderung einsetzen.

DOSTAVA »NA ČLOVEŠKI POGON«, TRAJNOSTEN RAZVOJ SKUPNOSTI

Mnoga leta so se načrtovalci kolesarjenja ukvarjali s vprašanjem, kako učinkovito in varno premikati kolesarje v središče mesta in na drugo stran. Pomembno je tudi opazovati kako se na istih področjih premikajo blago in usluge. V prispevku bom predstavil tri glavne točke dostave »na človeški pogon« (HPD), njen pomen in kako ja lahko vključena v kolesarsko infrastrukturo mesta. Prva točka HDP razvoja je vspodbujanje podjetij k uporabi koles za dostavo njihovega blaga in uslug. Mnogo ljudi se še spominja, kako je v preteklosti pek ali pa deček s špecerijo dostavljal blago s kolesom in ta način transporta bo pomemben za urban razvoj v tudi prihodnosti. Nadalje si bomo ogledali nekatera podjetja, ki uporabljajo dostavo »na človeški pogon« (HPDS) in vršijo dostavo za vlado, podjetja in skupnost. Kurirji na kolesih so v preteklosti v glavnem dostavljali manjše pakete in pisma. Z naraščajočo kolesarsko tehnologijo in željo po prevozu čim več blaga na znosni način, je bilo na svetu ustanovljenih mnogo HPDS-jev, mnogo jih danes deluje tudi v ZDA. Te družbe prevažajo tovor od 10g do 100 in več kg na enkrat, in ideja "en avto manj" na cesti, je postala realnost. Na koncu je potrebno tudi zasebne posameznike opogumiti za rabo kolesa za prevoz blaga za lastno uporabo. Pri vožnji otrok v dnevno varstvo, nakupih, ali celo pri selitvi se pri uporabi koles ne smemo omejevati, temveč razširiti našo zavest z mislijo prenašanja našega blaga tudi z dostavo »na človeški pogon«.

PROMOTING THE BICYCLE AS AN IMPORTANT PART OF URBAN REDEVELOPMENT- THE EXAMPLE OF THE WORLD HERITAGE OF BAMBERG

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TUESDAY

ENGLISH PROMOTING THE BICYCLE AS IMPORTANT PART OF URBAN REDEVELOPMENT - THE EXAMPLE OF THE WORLD HERITAGE OF BAMBERG -

The redevelopment project in the historic centre of Bamberg started 1972:

The development of the pedestrian precinct, the network of footways and cycle paths and many other creative measures in the field of traffic planning became integrated elements in the whole redevelopment project.

Combined with other elements like reuse of existing buildings for public institutions and for private flats, the number of inhabitants settled for central Bamberg at a high level.

Consequently there has been an increase in demand for sole-traders in the centre, thus boosting the economy. The large number of residents live centrally alleviates traffic. Promoting the bicycle played a considerable role in establishing a sustainable economic (re)development.

DEUTSCH FÖRDERUNG DES RADVERKEHRS ALS BEITRAG ZUR STADTSANIERUNG - DAS BEISPIEL DES ELTKULTURERBES BAMBERG -

Die Stadtsanierung in der historischen Altstadt von Bamberg begann 1972:

Die Schaffung der Fußgängerzone sowie eines engmaschigen Netzes von Fuß- und Radwegen wurden als integrale Elemente der Stadtsanierung betrachtet. Viele andere kreative Maßnahmen im Bereich der Verkehrsplanung traten hinzu. In Verbindung mit anderen Maßnahmen, wie der intelligenten Umnutzung vorhandener Bausubstanz für öffentliche Einrichtungen und privates Wohnen konnte die Einwohnerzahl in der Bamberger Innenstadt und den angrenzenden Stadtteilen langfristig auf einen hohen Niveau gefestigt werden.

Daraus folgt eine unverändert hohe Nachfrage im innerstädtischen Einzelhandel. Die große Zahl zentral lebender Einwohner vermeidet außerdem Verkehr. Die erfolgreiche Förderung des Radverkehrs spielt bei der Entwicklung einer belegbar nachhaltigen ökonomischen Entwicklung der Innenstadt eine wesentliche Rolle.

SLOVENSKO PROMOCIJA KOLESKA KOT POMEMBEN DEL PONOVRNEGA URBANEGA RAZVOJA - PRIMER SVETOVNE DEDIŠČINE BAMBERGA -

Leta 1972 se je pričel ponoven razvoj zgodovinskega središča Bamberga:

Enotni elementi celotnega projekta ponovnega razvoja so postali: ponoven razvoj področja za pešce, omrežje pločnikov in kolesarskih poti in mnogo ostalih kreativnih meril na področju prometnega planiranja.

Kombinirano z ostalimi elementi kot so, ponovna uporaba obstoječih zgradb za javne ustanove in privatna stanovanja, se je število prebivalcev, ki so se priselili v središče Bamberga, v veliki meri povečalo.

Posledično je prišlo do porasta zahtev po monopolih v centru, kar je povzročilo rast gospodarstva. Promocija kolesa je igrala pomembno vlogo pri snovanju ponovnega gospodarskega razvoja.

PROMOTING THE BICYCLE AS AN IMPORTANT PART OF URBAN REDEVELOPMENT- THE EXAMPLE OF THE WORLD HERITAGE OF BAMBERG -

BAMBERG

The City of Bamberg lies in the north of Bavaria. It is the cultural centre of Upper Franconia. It owes much to Emperor Heinrich II, who, by systematically building churches and monasteries, connected individually existing centres of population to form a town. Because of the unique way in which the structures of the town dating from the Early Middle Ages have been preserved, the old town of Bamberg was declared a part of the UNESCO World Heritage in 1993.

TYPICAL PROBLEMS

In the course of the economic revival following World War II the pressure on the town centre of Bamberg increased steadily. The increasing expansion of retail outlets began to endanger the historical structure of the town. The enormous increase in traffic caused the inhabitants quality of life to fall. The decline in the desirability of central properties paralysed investment. Renovation, so necessary for many buildings, did not take place. By the beginning of the 1970's more and more buildings were threatened by demolition.

URBAN REDEVELOPMENT

It was against this background that a programme of urban redevelopment was embarked on in 1972. In contrast to many other cities in central Europe, it was immediately recognised in Bamberg that the type of extensive redevelopment fashionable at the time was not suitable for a historical town centre. For this reason, the emphasis was put, as it still is, on the restoration of individual buildings (the so-called "Bamberg Model"). The timely decision to take this course of action took the existing structures of property and possession into account and made rapid progress possible in the renovation of individual buildings.

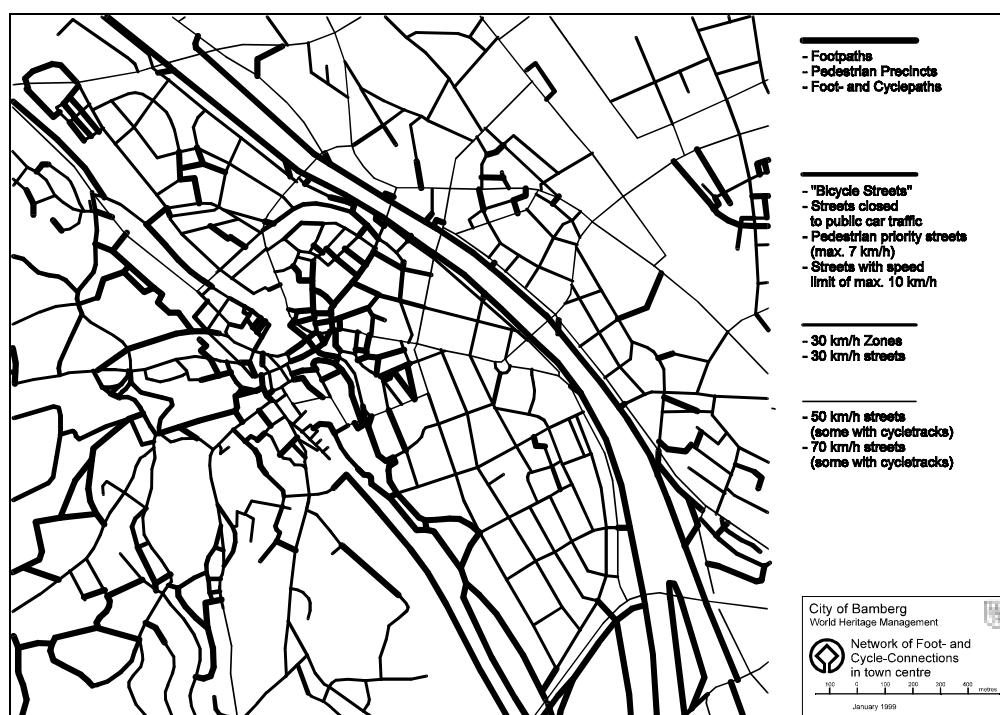


Fig. 1. Bamberg: Network of Foot- and Cycle-Connections in town centre

„THE COMPACT TOWN“

The success described here would not have been possible without solving the traffic problem as being the key to preserving the historical town centre.

Peripheral roads were built far enough out to divert through-traffic from the town centre without destroying the structure of the town and without spoiling the town silhouette.

In the old town the first step was the creation of a pedestrian precinct. The pedestrian precinct is connected to the surrounding residential areas by a dense network of foot- and cycle paths. The historical structure of the town has been of great importance here since many of these connecting paths are so narrow that they are only accessible by foot or bicycle, some of them only by foot. In this way, pedestrians and cyclists can take advantage of many short cuts which can make their journey quicker than if made in a car. In order to further extend this time advantage, a wide range of technical and legal possibilities are used:

- Building bridges for pedestrians and cyclists at key points
- Extensive use of traffic calmed areas and 30 km/h zones
- Opening one-way streets to cyclists
- Cycle paths along green axis ' without crossroads
- Opening pedestrian precincts to cyclists at night
- Setting-up of bicycle roads
- Opening bus lanes to bicycles

To make it easier for people living in the suburbs and in surrounding villages to leave their car at home and, at the same time, to ensure easy access to the town centre, the bus network has been expanded and a bus station has been built in a central position in the town centre. Additional measures in the public transport system have been taken.

Also of great significance for public awareness is the behaviour of local VIPs. The Lord Mayor officially opens an important improvement for cyclists every year. The Councilor for Planning and Building Affairs deliberately does without an official car and rides an official town bicycle in all weather conditions. Many members of the town council and many journalists in the town regularly use a bicycle. Other important social figures, for example, the archbishop and members of the Bamberg Symphonic Orchestra support a "car-diet-campaign".

The success is impressive: 57 % of all journeys made in Bamberg are made on foot, by bicycle or by public transport. In contrast, the proportion of journeys made in the private car is only 43 %.

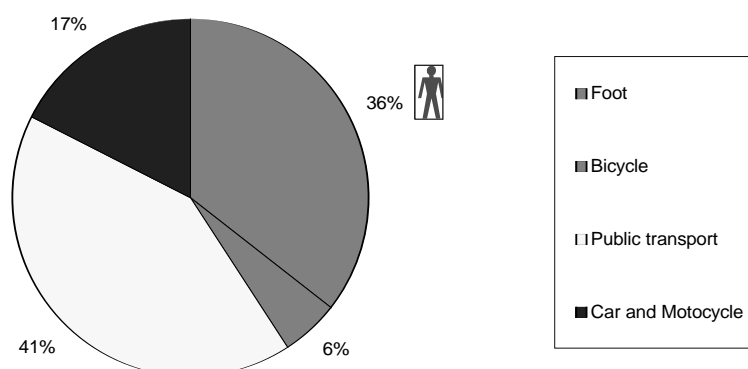
Reducing the number of roadside parking spaces and by converting many of these into residents' parking areas meant that parking has been more or less limited to multi-storey car parks at the edge of the town centre. At the same time, the creation of residents' parking areas has been a necessary and sensible way of making it more attractive and modern to live in the town centre. A bylaw has limited the building of car parks on private property. By regulating the supply of parking spaces it has been possible to influence the stream of traffic.

LIVING CENTRALLY

Of key importance for "The compact Town" has been that as many people as possible must live in the town centre or near enough to it that they can realistically walk or cycle. By converting buildings, extending attics, redeveloping old industrial land and by extensive renovation of historical buildings it has been possible to keep the percentage of the population living in the old town at a surprisingly high level: Today 1/3 of Bamberg's population lives within the 425 hectares of the historic old town, just as it did 25 years ago. Not only this, but, by creating new residential areas just outside the old town, it has also been possible to create new short cuts. Thus, 2/3 of Bamberg's population are able to cycle to the centre within 10 minutes.

2. Town centre shopping

Modal split of the population of Bamberg



Source: BAG-Untersuchung Kundenverkehr 1996 Graphic: City of Bamberg - World Heritage Management - January 1999

ECONOMIC SUCCESS

The high quantity of people living in or very near the town centre has meant a substantial consumer demand within the core of the town and in the residential areas. This demand is the backbone of the town centre's retail business. Surveys conducted by retailers have proved that only 17 % of citizens of Bamberg shopping in the town centre come by car. 83 % travel by more town-friendly means.

In total, approximately 50 % of customers do not come from Bamberg itself. Nevertheless, 90% of customers state that they can reach the centre of Bamberg within a maximum of 30 minutes. This shows that Bamberg's town centre remains easily accessible.

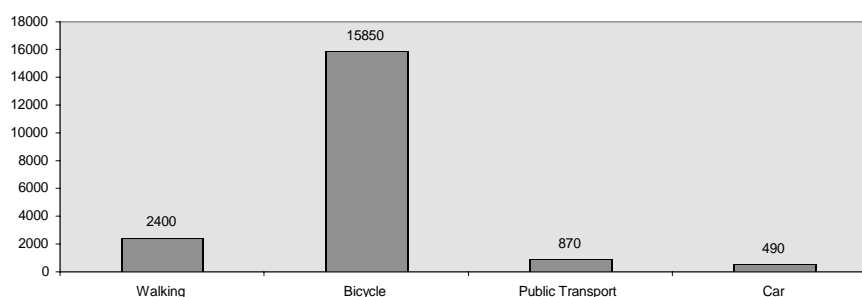
All this clearly indicates the success of the measures taken.

Positive momentum is gathering: exclusive businesses which benefit from the flair of the historic old town are on the increase. Shoppers value the atmosphere and are happy to leave their car at home. Spending increases which, in turn, strengthens property owners' ability to invest. This preserves buildings, thus increasing the value of properties, which then attract financially strong residents who then spend their money in the town centre.

Yesterday's vicious circle has finally been broken. The world cultural heritage of Bamberg can now live from its own gathering momentum.

3. Town centre shopping

Projection of annual spending (in Euro) in relation to type of transport 1996



Projection: City of Bamberg based on BAG-Untersuchung Kundenverkehr 1996 Graphic: City of Bamberg - World Heritage Management - January 1999

A detailed report made by the "Bundesarbeitsgemeinschaft der Mittel- und Großbetriebe des Einzelhandels e.V. (BAG)" (Federal working committee of middle-sized and large retail businesses) indicates that the annual turnover per car-customer in Bamberg's town centre lies between 1,000 DM and 1,500 DM; per pedestrian it lies at approx. 5,000 DM; per public transport customer between 2,000 DM and 5,000 DM and per cyclist at least 20,000 DM (!). This shows that it makes definite economic sense to target the cycling customer.

The retail industry's success can also be seen in the average length of visit: 27 % of customers spend more than two hours in Bamberg's town centre. In other German towns of comparable size this figure is only 19 %. It has obviously been possible to make time spent in the town centre more enjoyable.

The "Concept of Short Ways" has also had repercussions on the supply of employment in not only the service sector but even in the productive sector: Many companies know that both employees and customers come by foot, bicycle or by bus. Therefore they prefer central locations.

The most obvious repercussions of the success of the preservation of Bamberg and its economic success have been in tourism. The appeal of the town is not only due to the well-kept historic buildings but also to the pedestrian- and cyclist-friendly infrastructure. A large number of hotels in Bamberg do not offer their guests any car-parking facilities. Instead, they concentrate on those travelling by train, whether for business or pleasure purposes, and also cycling tourists. A stock of bicycles is kept specifically for these target groups. These hotels are very popular.

The public investigators, too, support the "Concept of Short Ways" by extending centrally located administration and education offices as well as places of cultural interest and sports halls. Only limited car-parking facilities are made available when building large public buildings (university, city hall, adult education centre, concert hall, ...). This has the effect of strengthening the town centre without the accompanying traffic congestion. Moreover, doing without expensive town centre car parks saves enormous sums of money which can then be spent on urban redevelopment and the preservation of historical monuments, as well as on further investment in the infrastructure for bicycles, pedestrians and buses.

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WEDNESDAY, 14/4/1999

EXPERIENCES OVERSEAS OF A REVIVAL OF NON-MOTORISED MODES

Laurent Comeliau, Barbara Dahm,
association 4d Debates on the Do's and Dont's of sustainable development
7 imp. Charles Petit; 75 011 Paris

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EXPERIENCES OVERSEAS OF A REVIVAL OF NON-MOTORISED MODES

In France, transport policies have been slow to include walking and bicycling, which at least permits to learn from the combined experience of other countries. Consequently, the study, carried out in the framework of the Eco-mobility research project, identified a sample of exemplary european and american towns on account of their capacity to maintain or reverse modal distribution to the advantage of non-motorised modes. A survey guide has been drawn up and tested in Freiburg in Brisgau and Ferrara which allows to describe the global strategy of the towns (goals, dates, key steps, difficulties encountered), to obtain essential statistical data (modal division, safety, pollution, budgets,...) and to understand and assess the initiatives taken (role of the various actors, search for indicators)

ERFAHRUNGEN MIT DER RÜCKKEHR ZU NICHT-MOTORISIERTEN VERKEHRSMITTELN IN ÜBERSEE

In Frankreich dauerte es lange, bis die Verkehrspolitik auch das Gehen und Radfahren berücksichtigte, was zumindest die Gelegenheit bot, aus den kombinierten Erfahrungen anderer Länder zu lernen. Dementsprechend nannte die Studie, die im Rahmen des Forschungsprojekts Eco-Mobility durchgeführt wurde, eine Reihe vorbildlicher europäischer und amerikanischer Städte, denen es gelungen ist, die Verkehrsaufteilung zu erhalten oder zugunsten des nicht-motorisierten Verkehrs umzukehren. Ein Modellfragebogen, der es ermöglicht, die jeweilige Gesamtstrategie einer Stadt zu beschreiben (Ziele, Daten, wichtigste Schritte, aufgetretene Schwierigkeiten), wichtige statistische Daten zu sammeln (Verkehrsaufteilung, Sicherheit, Umweltverschmutzung, Budgets ...) und die jeweils ergriffenen Initiativen zu verstehen und zu bewerten (Rolle der verschiedenen Protagonisten, Suche nach Indikatoren), wurde erstellt und in Freiburg im Breisgau und in Ferrara getestet.

PREKOMORSKE IZKUŠNJE PRI PONOVNEM ROJSTVU NEMOTORIZIRANIH SREDSTEV

V Franciji je bila politika transporta, ki vključuje peščenje in kolesarjenje, počasna in le-to nam dovoljuje, da se učimo iz prepletajočih se izkušenj drugih držav. Tako torej študija, ki je bila izpeljana v mejah raziskovalnega projekta "Eco-mobility" upošteva primer vzorca evropskih in ameriških mest. Kapaciteta mest naj bi ohranila ali popolnoma spremenila tipično porazdelitev ter dala prednost nemotoriziranim sredstvom. Naša raziskava je bila načrtovana in testirana za Freiburg, Brisgau in mesto Ferrara. Tako lahko opišemo globalno strategijo mest (najbolj pogosto porazdelitev, varnost, onesnaženje, proračune,...) in lažje razumemo ter cenimo sprejete iniciative (vlogo različnih akterjev, iskane indikatorje).

ENGLISH

DEUTSCH

SLOVENSKO

A FRENCH VIEW OF FOREIGN ECO-MOBILITY EXPERIENCES

The French Programme for Study and Research on Transport Innovations (PREDIT II -National Programme 1997-2000) acknowledges for the first time the importance of pedestrian and bicycle mobility as urban means of transport, by dedicating a specific research programme to them.

This increase of interest of French decision-makers and citizens for non-motorised transport indicates a collective consciousness building process of the negative impacts of "all-automobile" urban policies. The pollution levels recorded more precisely over the past three-four years in urban areas and epidemiological studies showing the risks of emissions on human health played a major role. Several public transport strikes (such as in Paris in December 1995) have also brought several French citizens back to their pedals or shoes, while others discovered the joys of roller-skating and of car-sharing.

Globally it is only recently that our country turns towards alternatives to individual car use and public transport. More ancient experience, accumulated in other countries, inside and outside Europe, can therefore be instructive.

The preparatory phase of PREDIT II allowed three partners, INRETS (...), 4D (Association Dossiers et Debats sur le Developpement Durable), and IFRESI (...) to analyse the challenges of what our German neighbours call the "ecological triad" (pedestrian, bicycle and public transport). We have chosen to use the term "eco-mobility" (Term associated to the concept of "eco-mobile chain", developed by Lydia Bonanomi, Ecole Polytechnique Federale de Lausanne, Switzerland).

In this "Eco-mobility" project, the association 4d analyses foreign experiences.

Like in the French case, sudden or occasional factors can be at the origin of a collective consciousness building process about the place to be given to eco-mobility. Sometimes the process is deeper-rooted and progressive, often linked to cultural traditions. Sometimes they can change practices in the long run and be at the origin of dramatic changes in modality evolutionary trends. Long term impacts on modal choice actually depend on how public and private decision makers respond to consciousness building. Sometimes they do not simply respond : inversely, a strong political will to privilege eco-mobile modes can enhance consciousness building.

PREDIT II gave us the opportunity to identify some of the factors initiating consciousness building processes in different foreign countries, as well as follow-up actions (public and private policies).

CONSCIOUSNESS BUILDING

According to the 1991 European opinion poll on downtown accessibility (UITP ? / European Commission), 73% of EU citizens wish solutions in favour of bicycle against car access, and 85% wish solutions favouring pedestrian against car access. In all European countries a large majority considers that the "ecological triad" should be privileged against cars. Even if all related to the negative consequences of all-car policies, motivations for these opinions vary according to the national, local and cultural context, as the following examples illustrate.

LOCAL MOTIVATIONS

In northern Italy (Milan, Bologna, Ferrara, Padova,...) air pollution damages architecture, and the increasing number of private cars represents an aesthetic threat to the patrimony of historical centres. These are the major motivations for inducing local authorities to close historical centres to car traffic.

In London the downtown area (particularly the financial centre) was closed to car traffic since 1995 for a totally different reason : the fear of IRA terrorist actions. Local authorities and part of the population had the opportunity to appreciate the advantages of large areas reserved only to bicycles and pedestrians.

Nonetheless, ecological preoccupations contribute to explain a large majority of policies implemented in favour of non motorised mobility.

For example the presence of a chemical industry in Ferrara (I) and that of a Nuclear power station in Freiburg (D) in the 1970s seem to have activated an early ecological consciousness in these towns which today stand in the forefront of eco-mobile cities. Copenhagen (DK) is also in the top ten of bicycle promoting experiences. Bicycle use represented here 50% of mobility in the 1950s, then declined until the mid 1970s (even though 1/3 of adults still used his/her bicycle at

least once a week). The oil shocks as well as the negative effects of the construction of only one fast-traffic road near the city centre have since then caused a new increase in the use of bicycles which continues since then.

GLOBAL MOTIVATIONS

At the end of the 1980s a certain number of global environment problems have appeared. The Brundtland Report (1987) and the Rio Earth Summit (1992) have largely contributed to draw public attention upon them. Some countries and some cities have then set ambitious objectives of air polluting emissions reduction, a large part of which originate in the transport sector.

That's how Portland (USA) engaged in a strong carbon dioxide (CO₂) emissions reduction policy, in order to reduce its contribution to global warming. Closer to us, Denmark aims at becoming the cleanest country in Europe. The Danish Transport Action National Plan intends to meet ambitious emission reduction objectives for Nox and CO₂, by developing an integrated public transport network axed on rail, on the extension of urban cycling networks and infrastructures, and on encouraging cycle-public transport combined systems. The Netherlands have also adopted very similar objectives. Last but not least, in Italy a large majority of cities have adopted the objective of "sustainable mobility" for their Urban Traffic Plans (Piano Urbano del Traffico - PUT), and developed large and efficient emissions and air quality monitoring systems, both in a local and global preoccupation perspective.

In other cases, the importance of eco-mobility arises from a new vision of the economy, which has to face as a new constraint the scarcity of available natural resources. It seems to be the case in Japan, where a post-motorisation era, one of dematerialisation of the economy, seems to have begun. This would explain, at least partially, the fact that 20% of Tokio's population goes to work by bicycle.

STRONG CULTURAL TRADITIONS

Cultural factors are always used to explain the advancement of some of our European neighbours, where non motorised mobility is highly spread. A certain "ecological culture" is often mentioned. That is the case for Scandinavian countries as well as their Dutch and German neighbours, which constitute relatively similar cultural poles where bicycle practice is traditionally deep-rooted.

Overseas, on the upper west coast of North-America, from California up to Canada, several cities, among which Portland, Seattle (USA), and Vancouver (Canada), are renowned for their pioneer role in environmental policy-making, especially in the development of transport modes alternative to automobiles.

It would seem that cross-cultural contexts are often a fertile ground for eco-mobility practices. In Europe, cases like Bolzano, Italy, situated at the interface between Italian and Austro-german cultures, and Strasbourg (France), crossing point between French and German experiences, show the interest of having to take different cultural models of behaviour into account to generate original and efficient solutions.

These differences are well illustrated in the comparison between cyclists' behaviour in Ferrara, Italy, and in Freiburg, Germany: in Ferrara cyclists tend to consider the bicycle as a prothesis of the human body, their riding is disrespectful of formal rules and apparently tends towards anarchy, whereas in Freiburg cyclists are fully conscious of the rules and they respect them when riding their bike just like when driving their car.

To some extent cultural factors are also the consequence of other elements, such as geographical and economic ones. The diffusion of environmentally friendly modes of transport is also linked to topography (absence of hills), urbanisation model (compact cities), population density, relative cost of the different modes of transport. For example in England the large number of pedestrians and cyclists can also be explained by the low cost of these modes; in Japan the cost of a bicycle is four times lower for the average worker than for his French colleague.

Yet recent works of the CERTU (?) and the Ecole Polytechnique Federale de Lausanne tend to minimise cultural factors. Comparing French and Swiss citizens placed in the same modal choice situations, they demonstrate that a strong public policy makes a big difference in the mobility options chosen.

Implemented policies

The change towards eco-mobility will take different forms, depending on the social actor(s) promoting it and mainly providing its momentum. On the side of public actors, the recourse to legislation is the privileged means, whereas private initiatives are mostly linked to direct economic benefits (or indirect ones by gains in brand image) when they come from firms, and consist mainly of lobbying practices when they come from organised citizens groups. In all cases specific pedestrian and cyclist

infrastructures are part of the strategies chosen. We give below some examples of foreign practices for each case.

LEGISLATION

It can be intended to respond locally or specifically to a specific problem.

For instance, in Tokyo, cyclists have the right to use sidewalks. In Denmark every taxi must dispose of means to take at least one bicycle on board. In Austria researchers propose to modify the road code to assimilate roller users, and especially skateboard users, to bicycles, considering stopping distances (2 metres minimum) and the necessary evolution space (1,80 metres) for this mode. More global legislation contribute to promote alternative modes to car use.

In Italy Urban Traffic Plans (PUT) impose an integrated approach to mobility problems, similarly to the French Plans de Déplacements Urbains (PDU).

In the Netherlands, the national strategy for the integration of transport and land planning turns around the ABC activities' location system. This system aims at mobility optimisation by choosing the most effective modes from all points of view (ecological, economic, space consumption) according to economic activities. For instance, all new university or administration centre must be placed near a public transport line.

In the USA two pieces of legislation contribute to promote non motorised mobility : the Intermodal Surface Transportation Efficiency Act (Istea) of 1991, and the Clean Air Act (CAA).

The Istea aims at reducing imbalances between different modes : for the first time roads federal funds can finance the rehabilitation of railways, pedestrian and cyclist infrastructures, for recreational and mobility purposes. Over the first three years 375 millions \$ were spent for pedestrian and cyclist mobility, compared to 41 millions \$ over the precedent 20 years.

The CAA indirectly promotes eco-mobile modes, by setting national objectives for air quality and energy conservation.

USERS AND FIRMS

Both users and firms organise to promote their interests before new public regulations promoting eco-mobility.

In Great Britain bus users have succeeded in keeping the size of sidewalks against road renewal plans intending to reduce them to the advantage of car traffic. In Toronto (Canada) Bicycle Users Groups (BUGs) have managed to impose themselves as unavoidable local partners for all questions concerning them. The National Federation of Cyclists and Pedestrians of the USA, or the European Cyclists' Federation (Association ?) equally show the capability of users to organise collective actions.

On the firms' side, an increasing number of them set up internal mobility plans. In this way they either respond to national or regional recommendations (Netherlands, Switzerland, some USA and Canadian States), or to social demands. In some cases it is also an opportunity for considerable cost reductions (cost of parking space for employees). The organisation of car-sharing (which in some countries, like Italy, has recently been the object of specific legislation), agreements with public transport companies or the supply of secure bicycle parking structures and office showers for cyclist employees are becoming generalised practices in the Netherlands, Switzerland, Denmark and Belgium.

SPECIFIC INFRASTRUCTURES

In Tokyo, traffic lights full red phases (simultaneous stop of all vehicles) allow cross-roads diagonal crossing by pedestrians. In North America, bicycle racks on buses are increasingly frequent. The English town of York, with its many kilometres of pedestrian paths, has the largest pedestrian zone in Europe. In Italy, the city of Perugia, whose centre is on the top of a hill, has developed an ingenious system of elevators and mobile stairways to facilitate pedestrian access to the centre closed to car access. Copenhagen,

contrary to other cities, has never transformed its cyclist paths in parking space. The Swiss 30 km/h limited speed zones, the German "urban backyards" and the Italian Limited Traffic Zones (Zone a Traffico Limitato - ZTL) represent good examples of car traffic limitation. Security-sound bicycle racks in the Netherlands and Denmark are good examples of infrastructures efficient against thefts.

RESEARCH FOLLOW-UP

All these foreign experiences of eco-mobility practices are rich of instructing examples. The mobility choice patterns

recorded in some foreign cities allow to believe that 20 to 30% of urban mobility can be reoriented to bicycle and a similar level to pedestrian mobility.

Hence, to deepen the analysis, 4d has proposed to PREDIT II to study more precisely about 15 foreign cities, at the same time offering good practices examples and sufficiently different in size, shape, density and topography. These are in Europe Groningen and Utrecht (NL), Copenhagen (DK), Graz (A), Freiburg, Munich and Berlin (D), Bern and Zurich (CH), Ferrara, Bolzano, Bologna, Perugia and Florence (I) ; in North America two cities have been proposed : Toronto (CAN) and Portland (USA). The impact of legislation such as the Clean Air Act or Istea in the USA will be specifically analysed.

The choice of cities has been conditioned by the possibility to evaluate results obtained : in most cases experiences have begun at least 10 years ago and have been the object of a follow-up. Another choice criteria was the inclusion of the city in a network, such as Cities for Cyclists, Car Free Cities, European Cyclists' Federation, Aalborg Agreement, participation to Velocities conferences, etc.

The research will be conducted in the form of semi-directive enquiries, based on an enquiry guide already tested in two cities : Ferrara (I) and Freiburg (D). It allows to describe in each case the overall strategy integrating non motorised mobility (objectives, key dates and stages, difficulties encountered), to know essential data in figures (modal choice, security, pollution, budgets, etc.), to understand and evaluate actions (roles of different actors, indicators research).

ENQUIRIES TESTED FREIBURG AND FERRARA

The two enquiries carried out to test the enquiry guide have allowed on one hand to approach the well-known experience of Freiburg (D) from a different perspective ; on the other hand they have contributed to reveal an experience pool, that of Italian cities, often ignored because of their atypical character. The case study of Ferrara, which presented bicycle and pedestrian mobility rates (30,7% and 20,1% respectively) higher than many northern European cities considered among the best examples of eco-mobility policies and practices, was particularly instructive. One of the most surprising features of Ferrara is the long term endurance of capillary bicycle use practices despite the absence of specific policies and infrastructures of cyclist paths development. An early environmental sensitiveness, but first of all an aesthetic concern for the preservation of the architectural patrimony of the city centre, which led to the creation of a large ZTL zone since the late 60s, has encouraged the endurance and the development of bicycle use, in an unexpected and inexpensive way.

The Ferrara case points out the interest of non- or low-technical solutions which, by their flexibility allow a " sociological " evolution of mobility practices in the long term, in a dynamic of space shared-appropriation between different users (who are actually the same individuals, at times car drivers, at times cyclists and/or pedestrians). In such " promiscuous " contexts, these users develop a " culture " of informal rules of mutual respect, rather than one of strict observation of norms and " space-zoning " infrastructures to the exclusive use of a particular category of users.

Finally, the work done has allowed us to develop transversal themes which will be further developed, such as : analysis of limited speed zones in Switzerland, Germany and Italy ; organisation/participation of cyclists and other users to mobility policy-making ; implemented policies follow-up indicators (particularly in North-America) ; car-sharing practices and policies (Germany, Netherlands, Italy) ; mobility plans in firms (Switzerland, Netherlands, North America).

CYCLING ACROSS NEW FRONTIERS IN TRAFFIC POLICIES

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ENGLISH

CYCLING ACROSS NEW FRONTIERS IN TRAFFIC POLICIES

Nowadays everybody recognises the many advantages of bicycle traffic. Even politicians will quickly agree with the importance of the bicycle as a part of the traffic policy. All very clear. But when these advantages must be put to practice it seems that other needs and traffic demands often dominate the advantages of the bicycle. In some sense this looks contradicting. However it might also be understandable. When for instance at the moment of decision making the needs and advantages of cycle traffic are not clearly indicated then it is very likely that these are to be judged as an issue of minor importance. The question is how to tackle this and how to fully integrate the needs of the cycle traffic with the policies for the so called motorised traffic? In a study in the Netherlands for a moderate town a cycle plan has been worked out in close co-ordination with working out the traffic policies for the motorised traffic in a so called Traffic Safety Plan. The results were astonishing and encouraging.

Key words that lead to a successful integrated traffic policy plan where:

- integrated approach: cycle traffic is not an island in the traffic policy plans. It is a part of the whole traffic policy in an area;
- networks: for both motorised traffic and cycle traffic; · combined use of traffic data;
- traffic safety;
- parallel track of decision making;
- attunement of the requirements of the provisions for motorised traffic with the provisions for cycle traffic;

This approach has led to the following encouraging results:

- more effective use of funds, now it is clear that the benefits of cycle provisions are not only beneficial to cycle traffic but are also beneficial to other traffic modes and as a general will increase the traffic safety;
- a large commitment on all levels to integrate the demands and not only the demands but also the benefits of the cycle traffic in the overall traffic policies;
- an effective cycle policy which indeed will stimulate the use of the bicycle;

This paper will explain how this integrated approach has been carried out.

WEDNESDAY

DEUTSCH

ERSCHLIESSUNG NEUER BEREICHE DER VERKEHRSPOLITIK MIT HILFE DES FAHRRADS

Heute sind die vielen Vorteile des Fahrradverkehrs allgemein anerkannt. Sogar die Politiker zögern nicht, zuzustimmen, daß das Fahrrad ein wichtiger Teil der Verkehrspolitik ist. Alles sehr klar. Wenn es jedoch darum geht, diese Vorteile in die Praxis umzusetzen, scheinen andere Bedürfnisse und Forderungen im Zusammenhang mit dem Verkehr oft den Vorteilen des Fahrrads gegenüber zu überwiegen. In mancher Hinsicht erscheint dies widersprüchlich. In gewisser Weise ist es aber auch verständlich. Wenn beispielsweise im Moment der Entscheidungsfindung die Bedürfnisse und Vorteile des Fahrradverkehrs nicht klar zum Ausdruck gebracht werden, so werden diese mit großer Wahrscheinlichkeit als eher unwichtig eingestuft. Folglich stellt sich die Frage, wie man dieses Problem lösen und die Notwendigkeiten in bezug auf den Fahrradverkehr vollständig mit der für den sogenannten motorisierten Verkehr entworfenen Politik vereinbaren kann. Im Rahmen einer Studie, die sich mit einer mittelgroßen Stadt in den Niederlanden beschäftigte, wurde in enger Koordination mit der Erstellung der Verkehrspolitik für den motorisierten Verkehr im Rahmen eines sogenannten Verkehrssicherheitsplans ein Fahrradverkehrsplan ausgearbeitet. Die Ergebnisse waren überraschend und ermutigend.

Die Schlüsselbegriffe, die zu einem erfolgreichen integrierten Verkehrspolitikplan führten, lauteten:

- Integrierter Ansatz: Der Fahrradverkehr ist keine Insel im Verkehrspolitikplan. Er ist vielmehr ein Teil der gesamten Verkehrspolitik eines Gebiets.
- Netze: Sowohl für den motorisierten Verkehr als auch für den Fahrradverkehr.
- Kombinierte Nutzung von Verkehrsdaten. · Verkehrssicherheit.
- Parallele Schienen bei der Entscheidungsfindung.
- Abstimmung der Erfordernisse der Vorschriften für den motorisierten Verkehr mit den Vorschriften für den Fahrradverkehr.

Dieser Ansatz hat zu den folgenden ermutigenden Ergebnissen geführt:

- Effizientere Verwendung finanzieller Mittel, da nun klar ist, daß die Vorschriften für den Fahrradverkehr nicht nur dem Fahrradverkehr zugute kommen, sondern auch anderen Verkehrskomponenten, und daß die Verkehrssicherheit insgesamt steigen wird.
- Großes Engagement auf allen Ebenen, nicht nur die Bedürfnisse, sondern auch die Vorteile des Fahrradverkehrs in der Gesamtverkehrspolitik zu berücksichtigen.
- Effektive Fahrradpolitik, die zum verstärkten Gebrauch des Fahrrads anregen wird.

Das Referat erläutert, wie dieser integrierte Ansatz in die Tat umgesetzt wurde.

KOLESARJENJE PREKO NOVIH MEJA PROMETNE POLITIKE

Dandanes vsi prepoznavamo velike prednosti kolesarskega prometa. Tudi politiki se bodo kmalu strinjali s pomembnostjo kolesarjenja kot sestavnim delom prometne politike. Vse je jasno. Ko pa je potrebno le-te prednosti prenesti v prakso, se zdi, da nad prednostmi kolesarjenja prevladajo ostale potrebe in zahteve prometa. V nekem smislu zveni to kontradiktorno. Po drugi strani pa lahko le-to razumemo. Če na primer v trenutku sprejemanja neke odločitve potrebe in prednosti kolesarskega prometa niso jasno nakazane, potem bodo najverjetneje presojene kot rezultat stranskega pomena. Postavlja se vprašanje kako to rešiti in popolnoma združiti potrebe kolesarskega prometa s politiko drugega takomenovanega motoriziranega prometa? V nizozemski študiji za vzdržno mesto je bil izdelan kolesarski načrt, ki je bil v tesni povezavi s prometno politiko motoriziranega prometa, tako smo ga poimenovali Načrt prometne varnosti. Rezultati so bili osupljivi in obenem vzpodbudni.

Ključne besede, ki so pripeljale do sledečih vzpodbudnih rezultatov, so:

- integrirani pristop: kolesarski promet ni otok sredi načrtov prometne politike, pač pa je del celotne prometne politike nekega območja;
- omrežja: tako za motoriziran, kot tudi kolesarski promet;
- prometna varnost;
- paralelna pot pri sprejemanju odločitve;
- uglasenost pri potrebnih ukrepih motoriziranega prometa z ukrepi kolesarskega prometa.

Ta pristop je pripeljal do sledečih vzpodbudnih rezultatov:

- bolj učinkovita uporaba skladov : sedaj je jasno, da koristi kolesarskih ukrepov niso samo ugodne v kolesarskem prometu, pač pa tudi pri drugih prometnih oblikah ter da lahko, splošno gledano, povečajo prometno varnost;
- velika predanost na vseh stopnjah k združitvi potreb, pa ne samo potreb, pač pa tudi koristi kolesarskega prometa v celotni prometni politiki;
- učinkovita kolesarska politika, ki bo stimulirala uporabo kolesa.

S tem prispevkom bo razložena izpeljava tega integriranega pristopa.

CYCLING ACROSS NEW FRONTIERS IN TRAFFIC POLICIES

THE MUNICIPALITY OF LANDGRAAF

Landgraaf is situated in the southern part of the Netherlands which in early times was dominated by the mining industries. Originally Landgraaf consisted out of four different towns. The four different towns were connected with each other by a system of rural main roads. These roads basically had a connecting function. In the process of time the four towns grew together and with this the road function of the rural roads changed. Instead of only facilitating for through traffic the original rural roads had now to provide room for local destination traffic too. This resulted in an increasing traffic unsafety, traffic congestions and traffic hindrance (noise and airpollution).

Enough reasons to turn the tide and to start a new traffic policy which has to result into an enduring safe road system. In 1997 the Dutch minister of transport launched a new traffic policy called "Durable Road Safety". Basically it aims at the following three main goals:

- avoid meaningless use of roads;
- avoid big differences in speed, direction and mass (for instance a cyclist versus a truck);
- avoid unpredictable behaviour of road users.

These goals offer many possibilities to fully integrate cycling in the overall traffic policy. To formulate this policy two traffic plans have been developed. This was the "Traffic Safety Plan" and the "Bicycle Plan". Both plans were worked out in close co-ordination to each other. The main characteristics of a Traffic Safety Plan are; a categorised road network, appointment of many 30 km/hour zones, detailed analyses of all traffic accidents, collecting all complains and suggestions of the inhabitants and a set of communication actions towards specific target groups.

TRIANGLE OF FUNCTION-USE AND SHAPE

By going through the triangle of -function-use-shape (see also figure 1) the moments of integration between the two plans are demonstrated. Integration is defined as those moments that information is being shared or combined, when requirements have to be matched and when decisions are to be made.

Function

The function of a road indicates by whom this road is used. It more or less describes the purpose of the road. By describing the function it becomes clear who are the most important traffic users of this road. Hereby a new but powerful tool is created. Because it is now more clear how to design the road infrastructure for this group. In the Traffic Safety Plan three categories have been distinguished. These are: main urban corridors (for through and long distance traffic), distributor roads; these roads form a link between the main corridors and the next category being the residential roads. The Bicycle Plan has defined "main urban cycle routes" and "additional cycle routes". The main urban cycle routes must provide direct, coherent and safe routes which can and will be used by most of the cycle traffic.

Defining the road categories and the cycle routes demand a careful analysis of the local situation. Most of the information has been presented on maps. When the first proposals were made the road categorisation and the cycle network were compared to each other and have been fine tuned in close relation with each other.

By fine tuning the networks at this stage the traffic goal, to stimulate cycle traffic for short local trips and to discourage the use of unnecessary car movements on short and local trips, can be checked and be judged on its effectiveness. It must be remembered that the road categorisation is not primarily meant for facilitating only for motorised traffic but that it should indeed encourage people to choose for the most appropriate traffic mode.

A cycle network isn't just a simple deduction of the road categorisation. It also isn't a collection of existing cycle tracks. In fact all roads (with or without cycle facilities) can be part of the main cycle network. From experience we know that the short, direct and fast bicycle connections without barriers will lead to a higher amount of cycle use in the urban modal split.

Use

In our opinion the "use" is the most important graduator to determine whether function, shape and use of a single road, crossing or the whole network are in balance. The use gives information about traffic volumes (and what roads are used for short cuts or ratrunning), traffic accidents, complains of the inhabitants, questionnaires. All this information is important when setting up the road categorisation and the cycle network. Normally it also gives a first indication of the kind of measures that need to be taken.

Shape

The design requirements of cycle routes have been compared with the design requirements of each road category and have been matched to each other. At this stage it was a challenge to reach a high level of quality with limited funds. It is a misunderstanding that main cycle routes must consist out of wide red tarmac tracks (in this context a track is physically segregated from other traffic). Obviously a design like that contains a high level of quality but it is not a quality warrant for the whole route. Most of the quality of the route depends on the quality of the facilities at junctions. It is at the junctions where cyclists decide in which direction to continue their route, where they are being delayed as a result of (long) waiting times and where they are being confronted with the many possible conflicts of motorised traffic. It also became clear from the safety analyses of the network that the junctions and crossing locations were the biggest problems. Therefore measures at junctions and crossings should be taken to maximise the connections to other cycle routes, to minimise waiting times and to enhance the traffic safety.

Another issue that should be mentioned is the uniformity of the measurements. Uniformity (related to the road function) gives clarity to all road users and thereby improves the road safety(it will avoid unpredictable behaviour). In Landgraaf for each road category one type of standard measure have been worked out.

ROUTE APPROACH

To improve the quality for cyclist the importance of a route approach has been acknowledge. Cyclists do not judge a route by just one single junction but take the quality of the entire route into consideration. All routes have been described and measures for all bottlenecks at these routes are formulated. Even though it is not always possible to improve the entire route at once (or in one season) it now becomes clear what measures are necessary to reach a the best quality, of which all departments of the municipality are familiar with.

The priority of measures have also been linked with the routes. The first set of criteria used to prioritise the measurements are; road safety (number of accidents and complains); number of cyclist and the use of school routes. The second set of criteria used are (these criteria are not directly related to the urgency of improvement based on traffic arguments); costs, political reasons and possibilities to combine measures with other road works (such as maintenance or sewage improvements).

Results

- more then 50 % of all main cycle routes lead through residential areas and is not routed along main roads. Again it was clear that cyclist indeed know the best and shortest routes;
- designing a cycle network with main cycle routes is necessary to determine the locations where measures should be taken. Without a coherent network it is impossible to decently combine cycle measures with measures for motorised traffic;
- the junctions and crossings between the residential areas turned out to be the main barriers for cyclists. Here lies the biggest possibilities and chances to gain and enhance quality;
- achieving political commitment for the roadcategorisation and cycle network was mainly possible due to a strong and close input of a large workgroup who helped putting the plans together. The counsellor of traffic was the chairman of this workgroup;
- it turned out to be much easier to give reasons for cycle measures since their goals are closely related to the Traffic Safety plan;
- the need to work on entire routes instead of just one or two locations is accepted;
- the costs of measures is often combined. Instead of serving one plan it turned out that most of the measures had a positive impact on both plans. This included road safety, to stop (or strongly discouraging) ratrunning and stimulating the most appropriate vehicle usage. Politicians are very sensitive for these arguments;
- integration of cycle policies with the traffic policies of motorised traffic results into many opportunities to make more efficient use of the existing network, to improve the road safety of all traffic participants and has a positive impact on the liveability of the entire city.

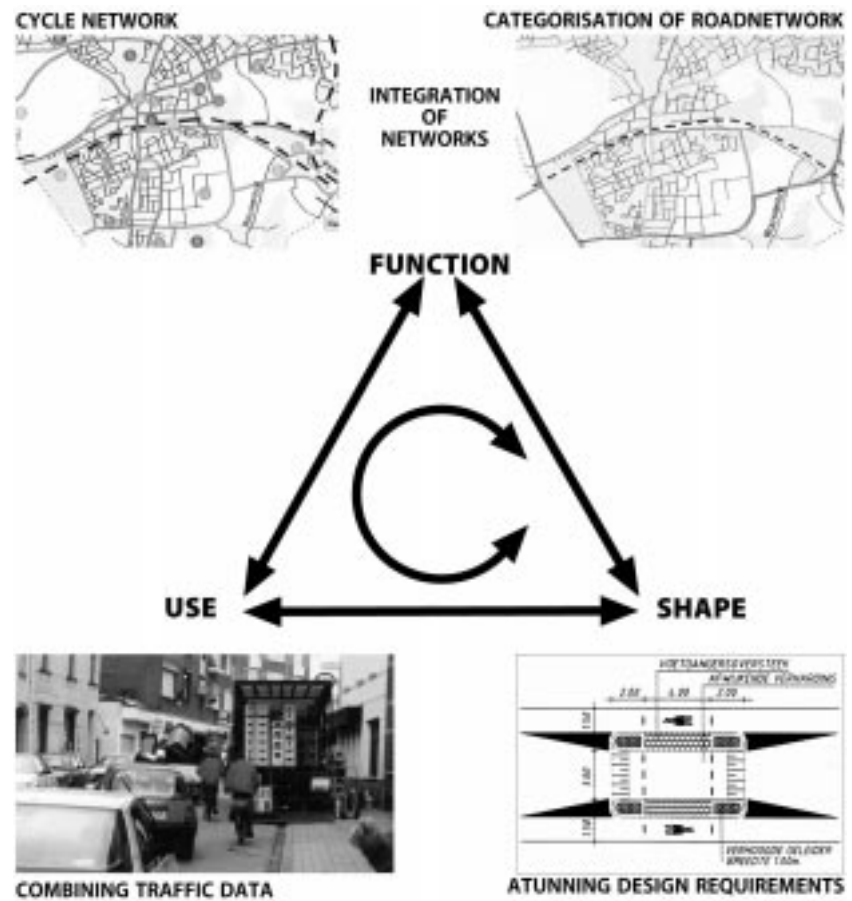


FIGURE 1: FUNCTION - USE - SHAPE

TRAFFIC CAPACITY REDUCTION

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TRAFFIC CAPACITY REDUCTION

There has been a surge of interest from across the world in the results of a recently completed research project which examined what happens to the levels of traffic when road capacity for motor vehicles is severely reduced. The study revealed that traffic levels drop by an average of 16%, and this has inspired press headlines of "Disappearing" and "Vanishing" Traffic ".

The work is a major first step in the development of methods to evaluate the new generation of traffic schemes in towns and cities in the new millennium. These could include cycle and other priority schemes, or measures to bring about environmental improvements that could be much more intensive than in the past - if it can be shown that traffic chaos and other impacts are not as bad as sometimes feared.

REDUKTION DER VERKEHRSKAPAZITÄT

Die Ergebnisse eines unlängst abgeschlossenen Forschungsprojekts, das analysierte, wie sich das Verkehrsaufkommen ändert, wenn die Straßenkapazität für motorisierte Fahrzeuge signifikant reduziert wird, haben in allen Teilen der Welt großes Interesse geweckt. Die Studie zeigte, daß das Verkehrsaufkommen durchschnittlich um 16% sinkt, was die Presse zu Schlagzeilen wie "Verschwinden des Verkehrs" inspiriert hat.

Diese Arbeit ist ein wichtiger erster Schritt in Richtung der Entwicklung von Methoden zur Evaluierung der neuen Generation von Verkehrsprogrammen in Städten und Großstädten im nächsten Jahrtausend. Dazu könnten auch Fahrradverkehrsprogramme und andere Prioritätsprogramme oder Maßnahmen zur Verbesserung der Umweltsituation gehören, die über die bisherigen weit hinausgehen - sofern nachgewiesen werden kann, daß das resultierende Verkehrschaos und sonstige Auswirkungen weniger gravierend sind, als dies mitunter befürchtet wird.

ZNIŽANJE PROMETNE KAPACITETE

Po vsem svetu se je pojavilo zanimanje za rezultate nedavno končanega raziskovalnega projekta, ki se je ukvarjal z vprašanjem, kaj se zgodi na nivoju prometa, če se zmanjša kapaciteta cest za motorna vozila. Raziskava je pokazala, da se nivo prometa zniža za povprečno 16% in temu so sledili časopisni naslovi, kot "Izginjajoč promet"...

To delo predstavlja prvi glavni korak v razvoju metod za vrednotenje nove generacije prometnih načrtov v mestih v novem tisočletju. To lahko vključuje kolo in ostale prednostne projekte ali pa merila za nastanek okoliških izboljšav, ki so lahko mnogo bolj intenzivne kot v preteklosti. To pa je odvisno od tega, ali lahko dokažemo, da prometni kaos in drugi vplivi niso tako škodljivi, kot se včasih bojimo.

ENGLISH

DEUTSCH

SLOVENSKO

TRAFFIC CAPACITY REDUCTIONS

BACKGROUND:

In July 1998 the United Kingdom government published a White Paper setting out a new approach to transport policy (TSO 1998). This introduced a Commission for Integrated Transport, a Strategic Rail Authority and Local Transport Plans, and endorsed the idea of Bus Quality Partnerships. Increased funding will be available for cycling, walking and public transport including funding from new tools - road user charging and levies on workplace parking. Guidance on Local Transport Plans requires strategies to be developed for cycling and walking, authorises local targets, and underlines how the government expects highway authorities to make better provision for these modes.

In doing so, one option is to consider proposals to re-allocate road space away from motor vehicle traffic to public and non-motorised transport. However, some sections of the community sometimes express their concerns quite forcefully about ensuing gridlock that they expect. Results from traffic models of such proposals usually forecast high levels of congestion. Newspapers can fuel public debate over the issues when they run headlines such as "traffic chaos predicted". Yet when schemes are implemented, anecdotal reports often are that "the traffic disappeared" or that problems are short-lived.

As it is generally accepted that increased road capacity in congested conditions is likely to bring about induced traffic, there is great interest in determining whether the reverse is true and whether traffic levels reduce when capacity is taken away. In the lead up to publication of the White Paper, the Department of Environment, Transport and the Regions joined with London Transport to determine a practical source for estimating the likely effect on traffic flows of selective reductions in highway capacity for certain classes of vehicles.

TRAFFIC CAPACITY REDUCTION STUDY:

Transport consultants MVA and the Economic and Social Research Council (ESRC) sponsored Transport Studies Unit of University College London were commissioned to undertake the research. Sub-consultants were Environmental and Transport Planning, the University of Kyoto, the Institute for Transport Studies at Leeds, and Napier University.

The £80,000 research study started in March 1997. The tasks included:

- an initial review of the evidence from over 100 places world-wide
- a review of the theoretical principles involved in modelling the effects of capacity reduction
- a round table of experts in this field who reviewed the above and made recommendations
- a compilation of the review of the evidence with a comprehensive account of each case study
- a report recommending a practical approach to be adopted in modelling

It looked at a range of real and theoretical cases, including emergency bridge and road closures. It considered the effect on road traffic volumes of roads which happened to be closed or have their capacity restricted. The study examined 60 or so cases in detail where closures and restrictions happened - sometimes unexpectedly - and how traffic models of such capacity restrictions ought to be developed.

RESULTS:

The clear conclusion from both real evidence and theoretical considerations is that measures which reduce or reallocate road capacity, when well designed and favoured by strong reasons of policy, need not automatically be rejected for fear of the extra congestion they might cause. The evidence showed a very wide range of results, but half of the cases showed overall reductions of more than 16% of the original traffic on affected roads (Cairns et al 1998).

The study's findings are consistent with the 1994 Standing Advisory Committee on Trunk Road Assessment report on "Induced Traffic" (TSO 1994). The SACTRA report showed how extra induced traffic can occur as a result of increased road capacity and that its size and significance is likely to vary widely. This new study looked at the opposite effect to that reported by SACTRA and showed similar variability.

Examination of every case study revealed problems in finding exact results because the purposes of monitoring at the time schemes were implemented were usually different from the aim of this study. Four main potential sources of bias

were identified:

- day to day variability in traffic not allowed for in one day counts
- journey detours longer-distance than captured in cordon counts
- traffic growth occurs due to other factors (eg increased income and car ownership)
- partial sampling

Changes in the levels of traffic were also dependent on capacity conditions of the surrounding road network where there might be capacity increases, adequate spare capacity or indeed no spare capacity.

The study examined carefully how drivers responded to the capacity reductions and the conclusion was that there was a much wider range of responses than was historically assumed when planning traffic schemes. Some 14 separate responses were identified from the case studies. Behavioural changes were found to vary over time with indications that the main impacts are usually in the first 3 years, though they may take between 5 and 10 years to complete. For example, a significant proportion of people over time change the place where they live or work. Each of these individual changes in travel patterns takes into account the new network conditions.

When considering a practical approach to assessing capacity re-allocation schemes (MVA 1997), the interim recommendations were:

- where no congested assignment model is available, undertake a manual analysis based on worst case scenarios;
- where a model is available, undertake a fixed trip matrix assignment to determine the worst problems on the network and cost changes;
- where cost changes are significant, undertake elastic assignments to mimic wider demand responses.

Essential further research was recommended before definitive advice can be offered. This involves studying:

- the size of a network to be modelled;
- when to model demand responses (depending on the size of cost changes);
- how to model time shifting of journeys.

The full reports provide a wealth of information in the case studies and on the technical issues of modelling. They include caveats about the data and assumptions that lead to the conclusions.

DISCUSSION:

The findings of this study strengthen the case for considering the option of allocating more road space to cyclists, pedestrians and buses where they would achieve significant benefits through the combination of time savings and the numbers of such travellers. Its timing is valuable given the increased importance in the UK being given to non-motorised and public transport users. The study is a helpful contribution to understanding traffic management measures and their impacts. Because the issues are complex, further work will be required to gain a full understanding of all the ramifications of capacity re-allocation schemes.

The effect on individual drivers and journeys when road space is reallocated to cyclists, pedestrians or buses depends on the specific scheme. A balance needs to be struck between gainers and losers. For example, although some people will enjoy the benefits of reduced traffic, other people, such as those living on 'rat runs', may face both increased traffic and increased emissions as a result of traffic redistribution. Capacity reallocation schemes are most likely to be justified where they fit into a wider framework of well designed and supported transport strategies and traffic management schemes.

The study focused on traffic flows and did not look at the impacts on journey speeds, congestion levels, environmental effects and the economic costs of trip suppression and redistribution. Data about these were included where available in the case studies. These factors would however need to be assessed as part of the appraisal process of any particular proposal.

The research advocates starting with a simple traffic model and only progressing to more complicated ones if the answers from the simple model justifies that expense, unless a more complex model is already available. It also pointed out there are some schemes - which are easily reversible - where it might be more cost effective to experiment rather than spend more on an appraisal.

Advice from the Department of the Environment, Transport and the Regions:

Advice on modelling traffic induced by road improvements was issued in December 1994 and amplified in February 1997 in the Design Manual for Road and Bridges (DMRB v12.2.2 TSO 1996-8). That advice recommends the same techniques as does this research to model traffic suppressed by a reallocation of highway capacity, and these are identical to those used to model any lack of capacity to accommodate predicted growth in demand. Both see suppressed traffic as the reverse of induced traffic.

Appraisals of the effects of individual proposals for reallocating highway capacity will continue to develop. DETR is considering how best to draw up an advice note on appraising road capacity reallocation from car to other users. The advice would be targeted at local authorities and others who wish to assess the full range of traffic related and environmental impacts. It would assist them in appraising and designing measures to meet their policy objectives. Some advice has been issued as draft guidance on Local Transport Plans (DETR 1998).

FURTHER WORK:

The Department commissioned the Institute for Transport Studies at the University of Leeds to see whether it was feasible to develop a guide to best practice, taking on views of a selected experts and using the case studies already collected together. The conclusion was that some of the cases studied might prove useful, but other sources would be needed (Bonsall 1998).

A further commission from the Department was placed with consultant MVA to investigate new elasticities for and methods of modelling trip suppression/induced traffic and to enhance the guidance on the variable trip matrix approach to assessing schemes. This will form an input to the next edition of that guidance.

Another commission has set out to develop new methods for modelling departure time choice for inclusion in existing traffic modelling packages. Revised models that take into account peak hour spreading could improve the economic benefit forecasts of capacity reallocations or new road schemes. This research is being undertaken by a consortium consisting of the Hague Consulting Group, Halcrow Fox, and Imperial College, London, supported by 3 international experts.

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WHY USE MARKETING METHODS IN THE DESIGN OF CYCLE ROUTE NETWORK

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WHY USE MARKETING METHODS IN THE DESIGN OF CYCLE ROUTE NETWORK

The methods generally used to work out network are not adapted to cycling tracks development. Much more than motorists, cyclists in their different ways of practising and the arrival of new users (skate-board, roller skate ...) have multiplied the categories of users. So it is necessary to estimate the importance of each in order to have a proper network.

The marketing method can help the project manager to know the public and its expectations, to promote the expansion of cycling tracks and through a chain of services to ensure conditions of success around the network.

WOZU BEI DER KONZIPIERUNG EINES RADSTRECKENNETZES MARKETINGMETHODEN ANWENDEN?

Die Einrichtung von Radstreckennetzen in Frankreich wird häufig von technischen Überlegungen beherrscht oder hängt von der Verfügbarkeit von Grund und Boden ab. In manchen Fällen hat dies zu beträchtlichen Rückschlägen mit katastrophalen Auswirkungen auf die Zukunft der Fahrradpolitik geführt. Das Problem besteht oftmals darin, daß niemand sich Gedanken darüber gemacht hat, von wem und unter welchen Umständen die Radstrecken benutzt werden sollen. Unter den Straßenplanern findet man selten so etwas wie eine "Marktkultur", obwohl viele Gründe für ein Umdenken in diese Richtung sprechen würden:

- Die Realisierung von Verkehrsnetzen ist teuer und sollte nicht in Angriff genommen werden, bevor man sich zumindest einige wenige Gedanken über den Investitionsertrag gemacht hat.
- Die Netze werden von verschiedenen Gruppen und zu verschiedenen Zwecken benutzt: Radfahren als Fortbewegungsmethode im täglichen Leben, als Freizeitaktivität, Sport, Tourismus. Die Bedürfnisse der verschiedenen Benutzergruppen sind unterschiedlich und manchmal sogar widersprüchlich.
- Der Grad der Erschließung sollte der jeweiligen Funktion und dem prognostizierten Verkehrsaufkommen entsprechen.
- Die mit der Schaffung einer derartigen Infrastruktur einhergehenden Strategien erfordern umfassendes Wissen über die Endbenutzer.

Das Departement Hérault an der französischen Mittelmeerküste (1 Million Einwohner) hat für die Entwicklung seines Radwegenetzes einen Marketingansatz angewendet. Marktforschungsmethoden einschließlich qualitativer Analysen, einer Segmentierung der Nachfrage, einer Charakterisierung des Erschließungsbedarfs und eine Quantifizierung der dabei definierten Sektoren sorgten dafür, daß das Netz den Bedürfnissen der Benutzer so weit wie möglich entspricht. Folgende Faktoren wurden berücksichtigt: Art der verwendeten Fahrräder, Art der Rundfahrt, Entfernung, Frequenz, Erschließung ...

Sobald die Nachfrage definiert ist, wird unter Anwendung einer Karte für die strategische Positionierung eine allgemeine Strategie formuliert.

Das Referat beschäftigt sich mit der Anwendung dieser Methoden, den aufgetretenen Problemen und den Gründen, warum diese Vorgangsweise im Bereich der Fahrradpolitik angewandt wurde.

ZAKAJ UPORABA TRŽNIH METOD PRI OBLIKOVANJU OMREŽJA KOLESARSKIH POTI?

Na izgradnjo omrežja kolesarskih poti v Franciji prepogosto vplivajo tehnično premišljevanje ali razpoložljivost zemljišč. V nekaterih primerih je to vodilo k bistvenemu nazadovanju s katastrofalnimi posledicami za prihodnost kolesarske politike. Pogosto je glavni problem, da nihče ne razmišlja, kdo bo uporabljal kolesarske poti in pod katerimi pogoji. Pri načrtovalcih cest redko naletimo na tržno obnašanje, vendar je za razmišljanje v tej smeri mnogo razlogov:

- izvedba omrežij je drago opravilo in do njega naj ne bi prišlo, če se ne ve kakšno bo povračilo investicije
- uporabniki omrežja so zelo različni: utilitaristi, ljudje v prostem času, športniki, turisti... in njihove potrebe so pogosto zelo različne in včasih tudi nezdržljive

- stopnja razvoja naj bo povezana s funkcijo in napovedano gostoto prometa
- politike, ki spremljajo nastanek takšne infrastrukture zahteva globinsko znanje končnega uporabnika.

Področje Hérault, na francoski sredozemski obali (1 milijon prebivalcev), je za razvoj omrežja kolesarskih poti uporabilo tržni pristop. Metode raziskave tržišča, vključujoč analizo kakovosti, razčlenitev zahtev, karakterizacijo potreb v obdobju razvoja in merljivost sektorjev, ki so jih pridobili na ta način, so uporabili z namenom, da bi omrežje čimbolj odgovarjalo potrebam uporabnikov. Faktorji, ki so jih upoštevali so: vrsta uporabljenega kolesa, v kakšnem obsegu, na kakšni razdalji, kako pogosto...

Ko so karakterizirali zahteve, so s pomočjo strateškega pozicijskega zemljevida definirali splošno politiko.

Prispevek se bo ukvarjal z izvajanjem teh metod, s problemi, na katere smo naleteli in razlogi za njihovo uporabo na področju kolesarske politike.

WHY USE MARKETING METHODS IN THE DESIGN OF CYCLE ROUTE NETWORK

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In France, the responsibility of managing the public road network is shared by the state, the "départements" (local authority 100 in France) and the towns (36 000).

National roads (state) are not supposed to take an important amount of bike traffic, whereas local roads (mainly streets), for cyclists, essentially account for short distance shifts (house/work, shopping). The natural purpose of "Départementale" roads is to cater for the most various categories of cycle riders.

Each of those categories has its own habits (different speed, alone or in groups, length of the route, type of material, etc.). They all agree that the road network has developed for the exclusive purpose of car traffic, to the detriment of any other user, such as cyclists. The diversity of these habits forces the "département" to find the right balance between the developments offered to cyclists and the needs expressed by their different categories.

I. WHICH ARE THE METHODS GENERALLY USED TO WORK OUT A CYCLING NETWORK?

Most of the time, the choice of fitting out a "départementale" road for cycling traffic is reduced to a cycling track or a cycling shoulder. This choice occurs at the occasion of a straightening and widening of the road network, building of a new road or replanning of an existing lane.

Cycling lane is often chosen when the cycling traffic is already very important, or when the surrounding urbanization

implies a large number of young riders. Cycling shoulders are preferred in the case of medium traffic roads (5 to 10 000 cars per day), connecting cities to the countryside. Other types of development such as "contre-allées" or parallel networks, are fitted out according to the opportunities offered.

To this step by step approach to the integration of cyclists in the network, the work planner may prefer a preliminary and global reflection in order to set up a policy in favour of bikes. This treatment of the problem has the advantage of better coherency, and long term work planning throughout the "département".

Generally speaking the work planner has no information about cyclists frequentation on the given network. When these elements exist they are often approximate, only pointing the presence of a few cyclists.

Usual investigation comprises finding out the places supposed to be large cycling traffic generators (schools, attractive sites, etc.) and densifying the cycling equipment in the surrounding area.

This method is based on the idea that the offer creates the demand, which is generally true in the case of a standard road network, of which one sometimes observes large use or even saturation soon after its opening.

However, this argument is risky regarding developments destined to cyclists for whom the bicycle is often a choice and request rather than an obligation.

The marketing method consists of trying to identify the demand in order to propose a better-adapted development.

Usually used in private companies, this method is necessary for anyone having to sell a product and who must acquire the best profit from the investment he has made (factory, production line, etc.).

The private investor starts by identifying the demand. He looks for the different types of consumer and tries to understand the needs and hopes of each of them. He adapts his production to these demands, developing the best range as possible.

He keeps in mind the existing products on the market, already satisfying part of the demands and evaluates the report of this demand with the range he proposes.

Then he has to make the product available, by creating a distribution network and using the appropriate promotional means to reach his potential customers.

Later, the investor will follow up the success of his product range in order to continue adapting to the constant evolution of consumers.

II. WHY SHOULD MARKETING METHODS BE USED FOR CYCLING DEVELOPMENT?

II. 1. The methods commonly used are not adapted to users from varied backgrounds

As for territorial development, it is common to estimate the gain of the investment on work planned during preliminary studies. Various methods make it possible to calculate, with relative accuracy, the gain achieved for the group collectivity (in general), by reducing accidents and /or the duration of itineraries.

Nevertheless, these methods, based on traffic estimation, are difficult to carry out reliably where cyclists are concerned. Various developments which have been carried out have indeed shown that the frequency rate can vary considerably from one place to another, and not only depends on the number of inhabitants or jobs near the site. Also, the successes, failures and unsatisfied requests registered have therefore led us to look for the determining factors of cycling practice or the use made of these developments.

The coastal strip of the Herault is a good example. It is sunny. Its migratory balance has been positive over the last 30 years. Large trunk roads have been developed to serve the inhabited areas, activity estates, or tourist areas. The fast evolution of these factors has disturbed the custom of shift cycling and the traffic for short distances has tended to decrease (in spite of the rise of population) while leisure cycling (20 to 30 km) has tended to increase.

II. 2. Different cyclists, different expectations

On the other hand the evolution of these practices has multiplied the categories of cyclists. It is difficult to compare practices, expectations and equipment of different groups such as cyclotourism clubs, families, sportsmen, rambles, housewives, off-road cyclists and schoolchildren.

The following chart (1) list classifies users, briefly draws up their profile and the best adapted developments to use. Before the conception of a development, it is useful to estimate the importance of each of these categories and their distribution within the territory.

II. 3. The arrival of new categories of users

In addition to the increase in cyclist categories, there has been an emergence of new users in developments originally

Characteristics	Loneliness	Outing	Passion	Retired	Relaxation
sex	men		men	men	women
age	less than 25	more than 50	less than 25	50 and more	35 to 49
socioprof. cat.	worker		senior mage. employee	inactive	employee
standing			at ease		
formation standies			high	low	
Numb.people at home	1	2	4 and more	1 and 2	3
environment	urban area of Paris	village = 2 000 inh.	Town + 100 000 except urb Paris	village - 2 000 inh.	
lodging	flat		flat		
type of bicy.	racing b. Mountain b.	town b;	rading b. mountain b.	town b.	Town b.

intended for cyclists.

They are mainly: mopeds;
skateboards;
roller skates;
ski-bikes;
joggers (sometime pushing prams);
wheelchairs;
horse-riders.

The presence and use of cycling lanes seems adapted to most of these categories (except for mopeds which are motorised). However, the differences in behaviour (especially speed) make it difficult for these users to coexist. Good coexistence initially needs tolerance and reciprocal respect.

Nevertheless, the conception of development can ease this co-existence and reduce the risks of the different users and estimate their numbers.

The conception and development depends therefore on the decision to favor this or that category.

Large tar-covered cycling roads allow for an important variety except for horse cyclists. Green lanes, with a hard surface will less favor skateboards and roller-skates.

The particular case of mopeds is more complex. The speed of a moped on a cycling lane is a danger for other users which often causes work-planners to forbid them on lanes.

However, these machines are frequently used by teenagers to go to school and the autonomy of this population and the security of their travel is an important social necessity.

Also, where moped frequentation is referred to in the marketing study, the cycling lane may be adapted to avoid excessive speed. One may also prefer a cycling shoulder to a cycling lane, directly on the side of the road itself in order to avoid head-on collisions between mopeds and bicycles in lanes.

II. 4. The Marketing method, a tool for convincing.

In spite of the high potential for frequentation of these developments bike users are often confronted to the scepticism of decision-makers who are generally not very sensitive to their cause. Cycling too often appears as an outmoded way of travelling and as such is not spontaneously taken into account by road-conceptors. As a leisure activity its territory is often reduced to the proximity of towns and not very accessible by the ring roads which surround them. As a help to tourist expansion, cycling is identified as an interesting and a means which must be expanded.

Measuring the demand of potential users, this marketing method allows for an argument to convince decision-makers to invest in developments answering a social expectation. Furthermore, this method will be useful, and will provide the opportunity of investing in developments for which success will quickly be measured by the public.

Again, it is important to emphasise that the increasing weight of social expenses covered by the departement will force the decision-makers to actively look for all sources of saving.

Therefore, they will be more vigilant concerning the interest in an investment development.

II. 5. Creating an environmental success

Cycling, whatever the category of the cyclist may be, is often limited by factors outside the development. In the case of useful shifts, its often the reduced possibility of secure parking near ones place of residence, work or shopping. For rambblers it is the existence of an hotel, a restaurant or the interest in a site which conditions the itinerary. The sporman who tours Brittany, the Pyrenees or the Herault is looking for guidebooks indicating itineraries and their characteristics. He will choose them according to their value. Because of this it is important to make sure that developments are reachable by users at whom they are aimed. This problem is similar to the notion of distribution marketing if one considers users as clients who must be reached and satisfied.

II. 6. Knowing the public and its hopes, ensuring the promotion of the development.

The marketing enquiry allows for the evaluation of public activity in existing development. The answers to this enquiry indicate the level of satisfaction, problems encountered and unsatisfied demands.

The enquiry also allows for getting to know the public and these details are precious for developers worried about the succes of a new development who may want to ensure its promotion. Traditional press methods can often be completed by campaigns near the residence or work of potential users.

II. 7. Evaluating the efficiency of the development

The budget context, which is increassingly restrictive to territorial collectivities and the will of citizens to understand where their taxes are going, has created an evaluation process of public politics. This concerns the environment social or territory development domains. This evaluation process tends to measure the efficiency of the invested money and actions carried in regard to the initial objectives.

Because of this it is preferable to fix the evaluation method at the conception of the development. For cycling lane developments the evaluation consists of using adapted automatic counting equipment to establish the progression of cycling lane usage. It will also be possible to measure the weekly distribution of frequentation. This can give indications as to the age of users present and their means of shifting.

In the long term, the evolution of the frequentation of these developments could alert the collectivity to their predictable saturation or on the contrary to problems met by users in the chain of services (quality of the covering, cleaning, intersection with new

and non-adapted developments .

The collectivity will dispose of the elements necessary to develop its project.

III. APPLICATION OF THE MARKETING METHOD ON THE CYCLING NETWORK IN THE HERAULT

Studies are at present being undertaken in the Hérault and thus we can only outline the method.

III. 1. The method of enquiry

Two enquiries have been carried out.

- The first one is to characterise the users. The target was to identify the principal categories of cyclists (and other users of the lane) and define their characteristics (age, socioprofessional, sex) and their tastes (equipment, itineraries, length of travel).

This enquiry has been based on cycling lanes. Thirty enquiry points were set up in the département and were mindful of the weekly, week-end, and holiday users. Five hundred users answered.

- The second enquiry is quantitative. Its aim was to quantify the importance of each category of users defined by the characterisation enquiry.

It was done by telephone on the basis of a random sample of five hundred people throughout the Hérault.

III. 2. EARLY RESULTS

The characterisation enquiry has confirmed the existence of categories of traditional cyclists on the network as well as their very contrasted wills and habits.

The presence of other users is very low except for mopeds (rollers in certain sectors)

The principal motivation for cyclists is leisure.

The majority are looking for short itineraries (20 to 30 km) in the direction of the sea or accesses to quiet roads.

An analysis of the principal components (*) of the different investigated parameters has provided the opportunity to clarify the type of development and destination sought by each of those categories.

The quantitative enquiry provided the opportunity to correct the results of the characterisation enquiry which is necessarily biased because of the type of sample taken.

(*) Statistical analysis method reducing to two composed variables the numerous parameters investigated.

(1) from A.F.I.T. - Jean Gamond " La pratique du vélo en France " - 199

SPOKES MAPS PROJECT SUMMARY

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SPOKES MAPS PROJECT SUMMARY

'Spokes' was awarded grant of @38,000 to promote and distribute cycle maps. Leaflet produced and sent to 200,000 local households offered free cycling map in return for name/ address (for cycling database) and how much cycling the household do (distance/ frequency of use). After 6 months similar questionnaire was sent to respondents to see if usage increased thanks to the maps. Leaflet includes seven good reasons for cycling, plus five factors which might put people off cycling (eg hills, ` weather, traffic etc) and how to minimise them.

Maps on offer included totally new map of Midlothian, produced by Project. It shows, first, cycle tracks and lanes, traffic calming, busy roads to be avoided. Second, hilliness, not by contours but by small arrows, pointing downhill, at every crossing of a 10m contour. Third, distances between each main junction. Fourth, places of interest, and bike shops. We report results ~ of Project and show innovative new map.

DAS RADWEGEKARTEN-PROJEKT VON SPOKES

"Spokes" wurde eine Förderung in der Höhe von 38.000 Pfund für die Bewerbung und Verbreitung von Radwegekarten zugesprochen. In einer speziell hergestellten Broschüre, die 200.000 lokalen Haushalten zugesandt wurde, wurde als Gegenleistung für die Bekanntgabe von Namen / Anschrift (für die Fahrradverkehrs-Datenbank) und Angaben zu den Radfahrgewohnheiten des Haushalts (zurückgelegte Entfernungen / Häufigkeit des Radfahrens) eine kostenlose Radwegekarte angeboten. Nach 6 Monaten wurde den Teilnehmern nochmals ein ähnlicher Fragebogen zugeschickt, um festzustellen, ob der Gebrauch des Fahrrads dank der erhaltenen Radwegekarten gestiegen war. Die Broschüre nennt sieben gute Gründe für das Radfahren sowie fünf Faktoren, die unter Umständen vom Radfahren abhalten (z.B. hügeliges Gelände, Witterungsbedingungen, Verkehr etc.) sowie Ratschläge, wie diese Negativfaktoren minimiert werden können.

KARTNI PROJEKT "NAPERÉ"

Kartnemu projektu "Napere" je bilo podeljenih 38. 000 funtov za podporo in razdelitev kolesarskih kart. Narejeni prospekt je bil poslan 200.000-im lokalnim gospodinjstvom in je ponujal kolesarsko karto zastonj. V zameno je moralo gospodinjstvo napisati svoj priimek, naslov (za osnovne kolesarske podatke) ter kako pogosto gospodinjstvo kolesari (razdaljo, pogostnost). Po šestih mesecih je bil ponovno poslan vprašalnik vsem gospodinjstvom, ki so se predhodno odzvala, da bi ugotovili, če se je uporaba koles povečala zahvaljujoč kolesarskim kartam. Letak tako vsebuje sedem dobrih razlogov za kolesarjenje in pet faktorjev, ki lahko ljudi odvrnejo od kolesarjenja (npr. hribi, vremenski pogoji, promet itd.) ter kako le-te zmanjšati na minimum.

Ponujene karte vsebujejo popolnoma novo karto Midlothian-a, ki je bila izdelana v okviru projekta. Karta prikazuje kolesarske poti in vrste, prometni mir in prometne ceste, ki naj bi se jih izogibali. Z majhnimi puščicami prikazuje tudi stopnjo hribovitosti; puščice so obrnjene po hribu navzdol pri vsaki 10- meterski konturi. Vrisane so tudi razdalje med večjimi križišči ter zanimivejši kraji in trgovine s kolesi.

Predstavili bomo rezultate našega projekta in novo inovativno karto.

ENGLISH

DEUTSCH

SLOVENSKO

SPOKES MAPS PROJECT

This Maps Project, co-ordinated by Spokes, the Lothians Cycle Campaign, was funded in part by a grant from the Scottish Office Cycle Challenge and took place in 1998. (Lothians is Edinburgh and the area around it, including West, East and Mid-lothian). The objectives of the Project were :

- 1- to encourage more cycling by making cycle maps of the area widely and easily available ;
- 2- to raise awareness of cycling as a mode of transport ;
- 3- to collect data on existing cycle use ;
- 4- to compile a database of households interested in cycling.

To achieve these aims we decided to produce a leaflet containing a free offer of one cycle map and the chance to buy others at a discount. In return recipients would answer a short questionnaire on current cycle use, and give names and addresses for the database. A follow-up questionnaire, 6 months or so later, would ask whether cycling had increased as a result of having the maps. There were three cycle maps involved :

- a- the existing Spokes map of Edinburgh, now in its fourth edition
- b- a cycle map of Livingston in West Lothian, being produced by West Lothian Council
- c- a cycle map of Midlothian, to be produced by the Project team.

The stages of the Project were thus as follows :

- 1- Devise first questionnaire
- 2- Produce the leaflet
- 3- Distribute the leaflet
- 4- Produce the Midlothian map
- 5- Print the Midlothian map
- 6- Re-print the Edinburgh map
- 7- Receive the responses and post out the maps
- 8- Analyse results of questionnaire
- 9- Devise second questionnaire
- 10- Receive the responses and analyse second questionnaire.

1 DEVISE FIRST QUESTIONNAIRE

This asked about the ages of each member of the household, how many bikes they had, how often they used them, and how many miles a week they cycled. A further question asked what the bike was normally used for, the choices being :

- travel to work or school ;
- other specific journeys eg shopping or visiting friends ;
- leisure ; and
- sport.

Finally they were asked : what action by government, local councils or employers would encourage you to cycle more ? Rather than leave this open-ended, we offered the following choices, to be ranked in importance (1,2 etc) :

- more cycle lanes on busy roads
- more off-road cycle paths
- secure, sheltered bike parking and showers for changing
- car use made less convenient/ more expensive
- shopping and leisure facilities located closer to town centres

The questions were vetted by the Scottish Office's Statistical Unit and revised to fit with similar questionnaires on cycle use which had already been carried out.

2 PRODUCE THE LEAFLET

The leaflet was professionally designed (by a friend of Spokes who charged us less than normal commercial rates) and printed in full colour on A4, folded into three (examples for display at Conference). It contained :

- seven good reasons for cycling
(cycling is healthy, quick, reliable, stress-free, cheap and 'green' etc)
- five excuses for NOT cycling, with suggestions for overcoming these problems - :
hills (get a light-weight bike with gears !),
wet weather,
too much traffic (use our maps to find cycle paths and quiet streets),
theft (leave the bike in open, public places) and
maintenance (pump your tyres up !).

The front of the leaflet proclaimed the free offer, and the back had more info about the maps, about Spokes, and the logos of the project's sponsors including the Scottish Office, 3 local Councils, and Spokes.

3 DISTRIBUTE THE LEAFLET :

Various options were considered and the Royal Mail was chosen as being the most reliable, the least likely to be instantly discarded by recipients as 'junk mail', and with a facility for targeting particular areas. Our budget allowed 200,000 leaflets to be printed, not enough to cover the whole of the Lothians, so we targeted them as follows :

- 1 An area of north Edinburgh previously sent a map offer was excluded
- 2 Areas of the city with high car ownership were targeted, with the aim of encouraging car users to cycle more.

4 PRODUCE MIDLOTHIAN MAP

This was the most exciting part of the Project. We had the opportunity to devise a cycle map from scratch. It would be different from conventional maps in highlighting quiet roads and cycle facilities, and different from the Edinburgh map because it covers a mainly rural area.

Terrain :

Midlothian covers an area of about 20 miles by 11 (32 x 18 km) and lies between the Pentland Hills and the Moorfoot Hills. It has many quiet roads suitable for cycling, and its northern boundary is only 10 km south of Edinburgh's city centre, so it is easily accessible for about 500,000 people. The terrain is mainly undulating, but a few rivers have carved quite deep valleys and cyclists need to work out good ways of crossing these with a minimum of climbing.

Gradients :

We worked out a system for showing gradients without the traditional contours. The problem with contours is that they are not easy to read, and you cannot tell whether you are about to climb or descend. We solved this by marking every crossing of a contour with an arrow, which points downhill. So the reader can tell immediately whether he/she will be climbing or descending, and the closeness of the arrows shows how steep the road is. Spot heights are used to identify summits and troughs, and steep hills are picked out with an additional red arrow, pointing downhill.

Distances :

We put in distances between each junction, a feature not often found on large-scale maps.

Cycle Facilities :

We highlighted any cycle facility, such as a cycle lane or converted rail path, in bright red. The main roads are shown in faded red and the minor roads in yellow, almost following the conventions of the Ordnance maps - we had thought of down-lighting main roads or using a different colour, but we didn't want the map to look too unfamiliar.

'Marginal' routes :

We added a category of 'path where you may have to dismount'. Some roads are private, or are footpaths in public parks etc where pedestrians might be encountered, and whereas cyclists can use them without problems, we can't officially show them as cycle routes. Some tracks are unsurfaced, and can be muddy in wet weather. This category thus includes a variety of 'unofficial' cycle routes.

Shelter :

We would like to have shown where a road is sheltered, eg by trees, hedges, walls etc, because wind is a serious problem in Scotland. But it proved not feasible to do this, except by showing woodland in green, as normal.

Places of Interest :

Cycle shops, and the location of (historic) Places of Interest, are displayed.

Town Maps :

On the reverse side we put town maps, with street names. Quiet streets, cycle lanes etc are shown, to enable readers to work out the best routes through the town. Gradients are also shown, by the arrows system as on the main map.

Further Information :

We added a list of Places of Interest, with a brief description, to give readers ideas about where to ride to. We also give information about other cycle maps and leaflets available, about how to report path defects, the need to take for pedestrians on shared-use paths, and information about Spokes and the CTC (Britain's cycling association).

Scale :

The scale of the main map is 1 : 30,000, which is about ideal for cycling use, and the scale of the town plans is 1 : 10,000, which allows room for street detail.

5 PRINT MIDLOTHIAN MAP

This may be the point to mention that for each stage of the Project, Scottish Office rules required that we obtain three competitive estimates from commercial organisations. As there were nine separate stages, this meant obtaining 27 estimates, and when we had done our overall budget and realised that larger numbers (of leaflets and maps) could be produced, many estimates had to be done again - 39 in all.

This was also because we had no idea how many responses we would receive from our 200,000 leaflets. We guessed a rate of between 3% and 5%, which meant estimating for 6000 maps, and 10,000 maps, respectively. Again we had to guess which maps would be asked for, and on the higher basis we guessed 5,000 for Edinburgh, 3,000 for Midlothian, and 2,000 for Livingston - total 10,000.

Copyright fees :

For each copy of the map we had to pay copyright to the Ordnance Survey, whose mapping we had used as a base, and to another local mapmaker on whose maps we had based the town plans.

6 RE-PRINT THE EDINBURGH MAP

We hoped to produce a new edition of this map for the Project, but the people involved were not available within the timescale. It's a reminder that we are volunteers doing a professional job ! The current edition, now three years old, was therefore re-printed with 5,000 copies.

7 RECEIVE RESPONSES AND SEND OUT MAPS

We employed a commercial firm to do this. It's called 'fulfilment' work, and until we started the Project we had never heard of it ! We chose a local firm (as well as the cheapest) so that we could keep closely in touch and sort out any problems.

We sent out, in total, 7,400 maps, including all the 3,000 Midlothian maps we had printed, 3,100 Edinburgh maps, and 1,300 of Livingston. This showed a response rate to the leaflet of 3.7%, ie in between our low estimate of 3% and our high estimate of 5%.

We estimated an income of £1,000 from sale of additional maps, which respondents could order at a discount, paying only £2 for maps which retail at £3 and £3.95 in the shops. To date we have sold 676 maps, thus exceeding our estimate by 176, and raising £1352. Most of these were the maps of Edinburgh and Midlothian.

8 ANALYSE FIRST QUESTIONNAIRE

Among the respondents there was a spread of ages (children 14%, teenagers 12%, adults 68%, and elderly (60+) 6%). Most households had 3 people, at least (and on average) one bike per household, and several had one per person, the range being from 0 to 12.

Frequency of cycle use :

The majority use their bikes 3 times a month or less (40%). One third (32%) however cycle 1 - 3 days a week, a smaller number (16%) cycle 4 - 6 days a week, and 11% claim to cycle daily.

Distances cycled :

Again, the majority ride the smallest distances - 56% manage less than 10 miles (16 km) per week, while a quarter (25%) achieve 10 - 29 miles (up to 50km), 11% ride between 30 and 49 miles (up to 80km) and a hardy 8% do 50 or more miles a week (80km plus).

Purpose of cycling :

The commonest use for the bike was for leisure (41%), followed by 'other specific journey', 28%. 19% claimed to use the bike for work or school, which is quite encouraging given the generally low modal share of cycling in Britain (nationally it is only 1%). The remaining 12% used a bike for sport. Ranked in order of importance, leisure was again the highest (59%), followed by travel to work or school (22%) and 'other specific journey' (16%). Sport ranked last at 3%.

9 DEVISE SECOND QUESTIONNAIRE

To evaluate the effectiveness of the Project we decided to send a second questionnaire to those who responded to the first. We wanted to ask whether recipients were cycling more as a result of getting the map (or maps). The problem was that the initial offer went out in summer (June - July), at a time when people are most likely to be cycling. The follow-up after 6 months would be going out in winter when most people put their bikes away. We therefore worded the questions in the past tense, asking for example, "did you cycle more..." rather than "are you cycling more..."

We also asked whether anyone in the household had started cycling as a result of the maps, and what kind of cycling they were doing more of, such as travel to work/ school, using the same categories as before. Then we asked, for each map, what they had used it for (eg travel to work etc), and finally, what did they like best about the map, what was the worst thing about it, and could they suggest improvements for future editions ?

To encourage a maximum of responses and give an incentive to reply, we enclosed a reply-paid envelope and offered a prize draw, with a deadline (5 February, ie 3 weeks after the mail-out) to ensure that people replied quickly.

So far we have had about 2,000 responses, a return rate of about 35% based on the mail-out of 5,750. This is extremely encouraging, and suggests there is an enthusiasm for the maps and an interest far beyond what would be normal.

We have not had the chance to analyse these responses (results to be reported at Conference) but initial indications are that many claim to have done more cycling as a result of getting the maps.

Since the Midlothian map was published, the organisers have heard many very favourable comments about it. One experienced cycle tourist claimed it was the best cycle map he had ever seen ! Copies will of course be available at the Conference for inspection and purchase.

CONCLUSION :

The indications are that the Project has achieved its objectives of raising awareness of cycling and of encouraging people in Edinburgh and the Lothians to cycle more. We have also compiled some data on cycle use, and a database of 5750 households who are interested in cycling.

In addition, the main product, ie the map of Midlothian, has proved popular and has attracted favourable comments.

UK CYCLE CENTRES: FACTORS THAT DETERMINE THEIR SUCCESS.

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ENGLISH

UK CYCLE CENTRES: FACTORS THAT DETERMINE THEIR SUCCESS.

Cycle Centres have been built in a number of locations in the UK in recent years. This presentation will discuss the benefits they offer to cyclists, the effect they have on levels of cycling, and the factors that contribute to their success. The author will discuss the importance of the various factors that determine the success of cycle centres. These include:

- Location
- Facilities available
- Appropriate pricing structure
- The right opening hours
- Local levels of theft perception
- The cultural importance of cycle centres.

This paper will be of relevance to those who are interested in the provision of high quality, long term cycle parking and associated facilities (eg local authorities, cycling organisations or transport consultants).

This presentation draws on research commissioned by the UK Government Department of the Environment, Transport

WEDNESDAY

DEUTSCH

FAHRRADZENTREN IN GROSSBRITANNIEN: FAKTOREN FÜR IHREN ERFOLG

In Großbritannien wurden in den letzten Jahren an mehreren Standorten sogenannte Fahrradzentren eingerichtet. Dieses Referat beschäftigt sich mit den Vorteilen, die sie den Radfahrern bieten, den Auswirkungen auf das Ausmaß des Fahrradverkehrs und den Faktoren, die zu ihrem Erfolg beitragen. Der Autor wird die Bedeutung der einzelnen für den Erfolg der Fahrradzentren ausschlaggebenden Faktoren beleuchten. Dazu gehören:

- Standort
- Zur Verfügung stehende Einrichtungen • Geeignete Preisstruktur
- Geeignete Öffnungszeiten
- Lokal wahrgenommene Diebstahlhäufigkeit • Kulturelle Bedeutung der Fahrradzentren

Das Referat ist relevant für all jene, die Interesse an der Bereitstellung qualitativ hochwertiger langfristiger Fahrradabstellmöglichkeiten mit Zusatzleistungen haben (z.B. Lokalbehörden, Radfahrerorganisationen oder Verkehrskonsulenten).

Das Referat stützt sich auf vom britischen Ministerium für Umwelt, Verkehrswesen und die Regionen in Auftrag gegebene Forschungsarbeiten.

SLO

KOLESARSKA SREDIŠČA: FAKTORJI, KI DOLOČAJO NJIHOV USPEH

Na mnogih lokacijah v Veliki Britaniji so v zadnjih letih zgradili kolesarska središča. Predstavitev se bo ukvarjala z ugodnostmi, ki jih ta središča nudijo kolesarjem, z vplivi, ki jih imajo na stopnjo kolesarjenja in s faktorji, ki prispevajo k njihovemu uspehu. Avtor bo razpravljal o pomembnosti različnih faktorjev, ki določajo uspeh kolesarskih središč. Ti so:

- lokacija
- koristne ugodnosti
- primerna struktura cen
- pravi odpiralni čas
- lokalna raven zaznavanja tatvin
- kulturna pomembnost kolesarskih središč.

Prispevek bo zanimiv za tiste, ki jih zanima preskrba z visoko kakovostnimi, dolgoročnimi kolesarskimi parkirišči in z njimi povezanimi službami (npr. lokalne oblasti, kolesarske organizacije ali prometni svetovalci).

Prispevek temelji na raziskavi, ki je bila opravljena po pooblastilu Vlade Republike Slovenije za okolje, promet in regije.

UK CYCLE CENTRES: FACTORS WHICH DETERMINE THEIR SUCCESS

This paper describes a project that looked at a number of cycle centres that were part-funded by the UK government's Cycle Challenge initiative. Cycle Challenge provided funding for projects that looked at ways of encouraging 'everyday' journeys to be made by bike. The research that this paper draws on was commissioned by the UK government's Department of the Environment, Transport and the Regions (DETR). This paper identifies the factors that determine why some Cycle Centres attract more custom than others.

What is a cycle centre?

A cycle centre is a facility that provides cyclists with a range of different services including some or all of the following:

- supervised cycle parking
- showers and changing facilities
- lockers for clothes, bike accessories and belongings
- information about cycling in the local area
- bicycle hire
- refreshments
- the services of a retail bike shop;
 - bike sales
 - accessories and components
 - repairs

The background to cycle centres in the UK

Britain's first cycle centre or bike park was opened in 1994 at Covent Garden in Central London. Although tucked away in a hidden backstreet, it has parked some 72,000 bicycles without loss or damage (1998) since it opened. Since then, more have been built at Leicester, Taunton, Liverpool, Kensington (London) and, most recently, another one has opened in Kingston Upon Hull.

The importance of cycle centres as a facilitator of utility cycling

The last 20 years have seen a dramatic increase in levels of bicycle ownership in the UK. In 1975 there were approximately 7 million bicycles in ownership. This figure increased to around 23 million bicycles by 1997. Despite this increase in ownership of over 300%, the actual use of bicycles has gradually fallen from the early 1980's in terms of total distance cycled.

Bicycle use has become more of a leisure pastime (symbolised by the massive sales of mountain bikes) than a means of getting from A to B (eg shopping and commuting).

One of the issues identified in the UK National Cycling Strategy (DOT, 1996) that might increase levels of cycling was the availability of secure cycle parking. It is this cycle parking that is the main attraction of the new cycle centres.

Who uses cycle centres?

The most common journey purpose of those using the cycle centres studied by TRL (Gardner and Guthrie 1998) was shopping (40% of interviewees), followed by commuting (22%). These journey purposes corresponded to the different parking durations. The most popular parking duration was between 1 and 2 hours. The next category was the 6 hour plus section.

IMPORTANT FEATURES OF CYCLE CENTRES

Basic facilities

The basic facilities of the cycle centre must be both of a high quality and sufficient in number. Cycle parking needs to be protected from the weather must be easy to access in order to minimise waiting times. Facilities for cycle commuters (showers, changing rooms and lockers) must have enough capacity to prevent queuing in the morning rush hour (as any time benefits of avoiding congestion may be lost whilst waiting in the queue for a shower).

Opening hours

The opening hours of the cycle centre must be sufficient to enable their use by cycle commuters who work regular office hours. This will mean opening as early as 8am and not closing before 6.30pm (to cater for office hours ranging from 9am to 6pm).

Costs

One of the main benefits of cycling is that it is a relatively cheap mode of transport. The cycle centre must therefore offer its facilities at a cost that will not deter people from using it, and that will enable savings to be made on public transport fares and car parking. Costs are generally in the region of up to £1 per day for parking (including use of showers) or an hourly rate such as 20p. Weekly, monthly and yearly charges are available, as are full membership deals offering further discounts both for individuals and companies.

Location

The location of the cycle centre is a very important factor in determining how many people will leave their bikes there. One of the reasons why cyclists can compete with other modes in congested urban areas is their ability to undertake door to door journeys. Any excess distance that has to be walked from where the bicycle is parked to the destination will detract from the appeal of the cycle parking facility. The main demand for the cycle centres studied by TRL was from shoppers. It is, therefore, very important that cycle centres are located as near to the heart of the shopping centre as possible.

Signing and Publicity

Signing to the cycle centre is very important, especially if it is sited in a relatively inconspicuous location. Leicester Bike Park has a good central location, next to the town hall. Although the Taunton Bike Park is within a few minutes walk of the main shopping centre, it is tucked away down a side street with relatively low pedestrian flows. It is no surprise therefore that 38% of respondents found out about the Leicester Bike Park as a passer by, whereas only 14% discovered the whereabouts of the Taunton Bike Park in this way.

Cycle centres need to target cyclists using less secure forms of cycle parking. Taunton Bike Park, for example, advertised itself by attaching stickers to cycle stands in other parts of the town.

Cycle centres in the UK are still sufficiently novel to generate significant interest in the media. All the centres studied benefitted from exposure in the local press and television, and the Leicester Bike Park was featured on national television evening news.

Celebrity endorsement has also generated considerable publicity for the centres in Liverpool and Hull which were set up and part-financed by celebrities from the worlds of acting (Brookside) and pop music (The Beautiful South) respectively.

VIABILITY OF CYCLE CENTRES

Although the cycle centres had not been established a long time when they were studied, it was generally agreed that the provision of cycle parking alone was not enough to cover running costs. Moreover, it was seen as a way of attracting custom to the more lucrative aspects of the cycle centre such as the sale of bicycles, components and equipment. Some cycle centres, such as Liverpool, experimented with abolishing all charges for cycle parking in order to draw in more custom. Other revenue generating facilities such as meeting rooms and a café were offered at the Liverpool Cycle Centre in addition to the standard bike shop services.

The provision of cycle parking in isolation in the UK is unlikely, at least initially, to be a profitable venture. Providers will require some form of financial support, such as a public subsidy, contributions from local businesses or preferential treatment in the planning process, or must be part of additional profit making enterprises such as a bike shop or cafe. The long-term ability to attract people away from car usage is likely to produce a positive social cost-benefit ratio provided that the cycle centre is well located and effectively managed.

Importance of locality

Previous research on facilities at the trip end for cyclists (Gardner and Ryley 1997) established that, for a mixture of practical and administrative reasons, many town centre establishments would find it difficult to incorporate cycling facilities on their premises.

The availability of alternative cycle parking and the levels of perceived bicycle theft will both directly impact on the success of the cycle centre. If cycle theft is not considered to be a problem, people will not be willing to pay for the safekeeping of their bicycles. Furthermore, if there is a good supply of alternative cycle parking at a more convenient location, this may well be used in preference to the cycle centre. In areas where a high percentage of people cycle to work, there are likely to be more workbased cycling facilities (secure cycle parking, showers, lockers etc) and consequently less demand for a cycle centre.

Determining the suitability of an area for a cycle centre

A survey of bicycles parked in a town centre can give a good indication of the perception of the risk of theft. A survey of bikes parked in Leicester revealed that 75% were parked securely (using a D lock attached to a fixed object), whereas in Taunton this figure was just 50%. Mountain bikes are particularly vulnerable to bike theft, so a separate survey of parked mountain bikes was carried out. This revealed that nearly all the mountain bikes (97%) surveyed in Leicester were parked securely, whereas just over half (52%) were parked securely in Taunton. Detachable accessories left on bikes were also surveyed. Only 11% of bikes parked in Leicester had detachable accessories (lights, panniers, water bottles etc). In Taunton this figure was 52%. Although these surveys can only take into account perception of theft, rather than actual theft, it is this perception that is important when cyclists are weighing up the pros and cons of paying to use supervised cycle parking.

Determining the availability of cycle facilities at work places can be done by a survey of employers. Alternatively, employer provision can be estimated by looking at cycle to work figures. Areas where higher than average numbers of people cycle to work (Taunton has 9%, the average for England is 3.5%), are more likely to have employers who are accustomed to providing their staff with cycle facilities. Indeed, a survey of non-Bike Park users in Taunton revealed that 85% of those in full or part time employment had secure cycle parking available to them at their workplace. This provision of work based facilities will significantly reduce the demand for commuter parking at the Bike Park.

THE IMPACT OF CYCLE CENTRES ON LOCAL TRAVEL PATTERNS

The cycle centres that were studied brought a wide range of benefits to cyclists. Primarily, they removed cyclists' fears that their parked bicycles would be stolen or vandalised. This meant that:

- respondents who were already cycling to the area served by the cycle centres claimed that they now cycled in more frequently (50% of respondents)
- respondents who claimed that they previously did not cycle to the area served by the cycle centres, now did so (25% of respondents) This is an important point as it shows that cycle centres can have a positive impact on the vitality of town and city centres, attracting people in who would not normally have made the journey at all by other modes.
- respondents who continued to cycle as often as they did before, now had additional peace of mind and reassurance against theft and vandalism. This allowed them to enjoy using a higher quality bike.

However, the number of parking spaces provided by the cycle centres studied was not sufficient to generate significant transfers between modes of travel.

Cultural impact

The interview data showed that staffed parking provision and a central location, coupled to a range of services (changing rooms, showers, bike shop) could also provide a focal centre for cyclists and promote a pro-cycling culture.

A cycle centre, therefore, has the advantage over other forms of cycle parking in that it can help create a sense of belonging. This change in cycling culture might help to increase levels of cycling even more than the practicality of the facility itself, and should be emphasised.

CONCLUSION

Cycling is a highly accessible mode of transport allowing people to make door to door journeys which can avoid the traffic queues, delays and uncertainties of other modes. The relatively low cost of cycling is also a major advantage.

The risk of theft and the lack of workplace cycling facilities are a major disincentive to potential cyclists.

Cycle centres can address both of these issues by providing secure cycle parking and cycle commuter facilities.

The provision of these facilities must not unduly compromise the benefits of utility cycling. This can best be achieved by:

- siting the cycle centre in as central an area as possible
- providing sufficient cycle parking and cycle commuter facilities to prevent the need for delays through excessive queuing
- enabling cyclists to continue to make savings over other modes of transport by with other modes such as bus and train fares, and car park charges.

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CONFIRMATION OF PRESENTATION AND PARTICIPATION

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BRIDGES FOR CYCLISTS

The bridges for cyclists are the important parts of the cycleways crossing different obstacles. (rivers, railways, other roads with heavy traffic)

Depending on traffic volumes, the bridge can be used by cyclists only, or together with pedestrians. In some cases the cycleway crosses not on an independent bridge, but on the bridge for motorised traffic, like cycle-lane.

The presentation describes the different types of structures used as bridges for cyclists. (Wooden superstructures and substructures ; steel beams with wooden deck and reinforced concrete substructure ; etc.)

The paper also gives a short summary of the special problems of bridge-design for cyclists (loads, height of railing , etc.) and describes some ways to solve them in Hungary and abroad. (In Great-Britain, etc.)

RADWEGBRÜCKEN

Radwegbrücken sind jener wichtige Teil der Radstrecken, der die Überquerung verschiedener Hindernisse erlaubt (Flüsse, Eisenbahnlinien, andere stark befahrene Straßen).

Je nach dem Verkehrsaufkommen kann die Brücke nur den Radfahrern zur Verfügung gestellt oder von Radfahrern und Fußgängern gemeinsam benutzt werden. In einigen Fällen führen Radwege nicht über separate Brücken, sondern werden in Form einer Radspur über die für den motorisierten Verkehr bestimmte Brücke geführt.

Das Referat beschreibt die verschiedenen Arten von Konstruktionen, die als Radwegbrücken dienen können (Aufbau und Unterbau aus Holz, Stahlbalken mit hölzerner Fahrfläche und Unterbau aus Stahlbeton etc.).

Das Referat liefert außerdem eine kurze Zusammenfassung der spezifischen Probleme, die beim Bau von Radwegbrücken zu berücksichtigen sind (Belastung, Geländerhöhe etc.), und beschreibt einige Möglichkeiten, wie diese Probleme in Ungarn und im Ausland (Großbritannien etc.) gelöst werden können.

MOSTOVI ZA KOLESARJE

Mostovi za kolesarje so pomembni sestavni deli kolesarskih stez, ki prečkajo različne ovire (reke, železnice, ostale ceste z gostim prometom...).

Odvisno od obsega prometa, je most lahko uporaben le za kolesarje, ali pa ga uporabljajo tudi pešci. V nekaterih primerih kolesarska steza ovire ne prečka preko samostojnega mostu, temveč je priključena na mostu za motoriziran promet.

Prispevek opisuje različne tipe konstrukcij, ki so uporabni za kolesarske mostove (lesene vrhnje gradnje in temelji, jekleni prečniki z lesenim zgornjim delom in ojačanimi betonskimi temelji...)

Prispevek zajema tudi kratek povzetek posebnih problemov pri planiranju mostov za kolesarje (obremenitev, višina ograje...) in opisuje poti do rešitve teh problemov na Madžarskem in v tujini (npr. v Veliki Britaniji...).

BRIDGES FOR CYCLISTS

When the cycleway crosses an obstacle (river, railways, roads) it must be led on a bridge (or sometimes in a subway under the obstacle).

The types of the bridges depend on the position of the cycleway or the cycle-lane and on the size of the obstacle.

Some generally used solutions are summarized in Table 1.

In case of crossing an obstacle the best and safest solution for the cyclists is

- the independent bridge or
- the separated part of a long road-bridge

OBSTACLE		WHO CROSSES IT	
		only cyclists and/or pedestrians	highway traffic + cyclists + pedestrians
WIDE (railway lines, roads, river)	independent bridge	road bridge with cycle-lane	road bridge with cycle-lane
		- on the carriageway	- on the walkway
		- on cantilever	- on cantilever
		separated from the road traffic	separated from the road traffic - under the bridge
NARROW (stream)	independent bridge	road bridge with cycle-lane	independent bridge for cyclists and pedestrians
		on the carriageway	(similar to the bridge of the highway)

Table 1:

General solutions for crossing different types of obstacles

The most important requirements for cycle-bridges according to the Hungarian Standards for Highway-bridges [1]:

- minimal width (in case of one lane only): $1,00+2*0,30= 1,60$ m
- minimal width (in case of two lanes): $1,80+2*0,30= 2,40$ m
- minimal vertical clearance above the surface: 2,50 m
- minimal height of the railing: 1,40 m
- live load : 500 kN/m² or 2,5 kN on 0,1*0,1m surface
- dynamic factor: $\mu = 1,05 + 5/(L-5)$ (max:1,40) where L = span in [m]

The live load is the same on pedestrian- and on cycle-bridges, too.

So if the width is enough for both traffic, existing pedestrian-bridges can be used by cyclists, too. The height of the railing must be raised from 1,0 m to 1,4 m.

WHY TO DEAL WITH BRIDGES FOR CYCLISTS ?

The live load is much less than that of the highway-bridges, so other materials and other constructions can be used. The structure may be lighter, cheaper, more esthetic and more suitable to its surrounding. Natural materials can be used.

Typical materials of the cycle-bridges:

- for longer spans (over 50 m): steel
- for medium spans (10 m 50 m): steel main girders with wooden deck
- for short spans (under 10 m): wooden structure

Some beautiful and interesting examples:

- the 238 m long pedestrian-cycle-bridge in Cambridge (U.K.) over the railway station.

The plastic cover increases the comfort of the users. (Figure 1.) [2]



Figure 1. Pedestrian-cycle-bridge in Cambridge [2]

Many times onto a bridge over a railway station the pedestrians and cyclists are led on covered ramps perpendicular to the axis of the bridge. (For example: in Telford /U.K./, etc.)

- the Kaisermühlen Bridge (Austria). It's cable-stayed superstructure was built in 1993.
- the suspension bridge over the river Lahn (Germany) built in 1994 ; similar to the historic one at it's place from 1917

- the U6 bridge near the Nordbahnbrücke over the Danube in Wien. The cyclists and the pedestrians are led under the deck of U6 metro-line. (Figure 2.)

- in Szarvas (Hungary) over the river "Dead- Korös" - not far from the famous Botanic Garden - the bridge for cyclists and pedestrians was completed in 1994.

The structure fits well into the surrounding (the main beams are steel and all the other parts are wooden). (Figure 3.)



Figure 2. The U6 bridge over the Danube in Wien.

Figure 3. The bridge for cyclists and pedestrians over the river "Dead-Korös" in Szarvas.



- the cycle-bridge over a stream in Fertod (Hungary), with wooden superstructure, built near the old road-bridge

When a new road bridge is built, or the old one is reconstructed, in most cases care is taken to make enough space for the cyclists on the bridge now and in the future.

(For example: on the Danube-bridge in Lágymányos /Budapest/, in Taksony, etc.)

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THE NEW CATEGORIES OF BIKES AND THEIR DEMAND FOR BETTER INFRA STRUCTURE

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ENGLISH

THE NEW CATEGORIES OF BIKES AND THEIR DEMAND FOR BETTER INFRA STRUCTURE

In order to widen the use of human power for personal transport, commuting, touring, shopping etc., all year and independent of weather conditions, we must develop a much broader variety of bicycle design.

As a consequence of this, the future infra structure must allow for a much greater variety of human powered vehicles. The innovation in bicycle design has taken pace the last 10-15 years, and the authorities have been forced to revise roles and regulations and redefine the very concept of bicycle. We will take a look at the new types of bicycle, tricycles, recumbents, velomobiles etc. and analyze their characteristics with respect to typical speed, acceleration, manoeuvrability and stability, load carrying capacity, the space they take up in traffic and on a parking area.

The analysis will in particular focus on new human powered vehicles which will make cycling a comfortable means of transportation all year and in all kinds of weather.

These are the (electro) power assisted bikes and the velomobile. From a legal point of view they are still bicycles, require no drivers license, can be used on bicycle tracks, but they represent several steps forward with respect to comfort, safety, speed and weather protection.

E-bikes and velomobiles should, therefore, be good alternatives for car drivers, who hesitate to use a bike because they do not have the strength or they do not want to be wet and cold. Improvements of the infra structure would make these alternatives even more attractive. The paper presents specific proposals for such improvements.

WEDNESDAY

DEUTSCH

NEUE FAHRRADTYPEN UND DIE DAMIT EINERGEHENDE NOTWENDIGKEIT EINER BESSEREN INFRASTRUKTUR

Wir müssen eine wesentlich größere Vielfalt unterschiedlicher Fahrräder entwickeln, um den Einsatz von Muskelkraft für persönliche Fortbewegung, Pendeln, Touring, Einkaufsfahrten etc. das ganze Jahr über und unabhängig von den Witterungsbedingungen zu steigern.

Deshalb muß die künftige Infrastruktur für eine umfangreichere Palette verschiedener HPV (human-powered vehicles) geeignet sein. Die Innovation in der Fahrradkonstruktion hat sich in den letzten 10 - 15 Jahren vollzogen, und die Behörden sahen sich gezwungen, Rollen und Bestimmungen neu zu überdenken und den Begriff des Fahrrads selbst neu zu definieren.

Wir werden einen Blick auf die neuen Arten von Fahrrädern, Dreirädern, Liegerädern, Velomobilen etc. werfen und ihre Charakteristika in bezug auf die typische Geschwindigkeit, Beschleunigung, Manövrierbarkeit und Stabilität, Belastbarkeit, Platzverbrauch im Verkehr und Parkplatzbedarf analysieren.

Die Analyse wird sich insbesondere auf neue HPV konzentrieren, die das Radfahren das ganze Jahr über ungeachtet der herrschenden Witterungsbedingungen zu einer bequemen Fortbewegungsart machen werden.

Es handelt sich dabei um (Elektro)motorunterstützte Fahrräder und das Velomobil. Vom rechtlichen Standpunkt her gesehen sind sie noch der Kategorie der Fahrräder zuzuordnen, erfordern keinen Führerschein und können auf Radwegen gefahren werden, doch stellen sie in bezug auf Bequemlichkeit, Sicherheit, Geschwindigkeit und Witterungsschutz gleich mehrere Schritte nach vorn dar.

E-Fahrräder und Velomobile sollten deshalb gute Alternativen für Autofahrer sein, die zögern, auf ein Fahrrad umzusteigen, weil sie entweder nicht die Kraft dazu haben oder nicht naß werden oder frieren wollen. Verbesserungen der Infrastruktur würden diese Alternativen sogar noch attraktiver machen.

Das Referat präsentiert spezifische Vorschläge für derartige Verbesserungen.

NOVE KATEGORIJE KOLES IN NJIHOVA POTREBA PO BOLJŠI INFRASTRUKTURI

Če želimo razširiti uporabo človeškega pogona pri osebnem prevozu, vožastvu, turah, nakupovanju ipd. skozi celo leto in ne glede na vremenske pogoje, potem moramo razširiti tudi vrsto novih kolesarskih oblik, modelov.

Posledica tega pa je tudi bodoča infrastruktura, ki mora biti prilagojena tem novim vrstam vozil na človeški pogon. Inovacije na področju kolesarskega oblikovanja se v zadnjih 10 do 15 letih hitro odvijajo in tako so bile oblasti prisiljene obnoviti vloge, pravila ter ponovno definirati sam koncept kolesa. Ogledali si bomo nove tipe koles, trikoles, ležečih koles, velomobilov itd. ter analizirali njihove karakteristike, upoštevajoč njihovo tipično hitrost, pospešek, manevriranje in stabilnost, kapaciteto prevoza tovora ter prostor, ki ga zavzemajo v prometu in na parkiriščih.

Analiza se s še posebnim poudarkom osredotoča na nova vozila človeškega pogona, ki bodo kolesarjenje spremenila v udobnejši način transporta skozi celo leto in v vseh vremenskih pogojih.

To so kolesa s pomožnim (elektro) pogonom in velomobil. S pravnega gledišča so to še vedno kolesa, ki ne zahtevajo voziškega izpita, jih lahko vozimo po kolesarskih poteh, s tem da so nekaj korakov naprej, kar se tiče udobnosti, varnosti, hitrosti in vremenske zaščite.

E-kolesa in velomobili bi bili tako dobra alternativa za voznike avtomobilov, ki odlašajo uporabo kolesa, ker nimajo zanj bodisi dovolj moči ali pa ne želijo biti mokri in mrzli. Izboljšave infrastrukture bi te alternative naredile še bolj privlačne. Seminar predstavlja tipične predloge le-teh izboljšav.

SLOVENSKO

PLANNING FOR CYCLING RELATIVE TO AN URBAN ROAD HIERARCHY

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PLANNING FOR CYCLING RELATIVE TO AN URBAN ROAD HIERARCHY

The table Functions of an urban hierarchy in the Institute of Highways and Transportation's handbook Transport in the Urban Environment gives advice on providing for a variety of activities on all categories of thoroughfare. A fuller table, including cycle street as a category and additional notes for cycling, is presented.

Cycling is practical on most non-motor routes and on most access roads; in one town, most of these can be linked by a network of cycle distributors. The network could be established on main roads, or primarily on access roads with special facilities to cross main roads.

The table and this network, even if it is only planned, should guide all planning and designing of a town's roads.

ENGLISH

PLANUNG DES FAHRRADVERKEHRS UNTER BERÜCKSICHTIGUNG EINER URBANEN STRASSENHIERARCHIE

Die mit „Funktionen einer urbanen Hierarchie“ übertitelte Tabelle im Handbuch des Institute of Highways and Transportation über den Verkehr im städtischen Umfeld („Transport in the Urban Environment“) bietet Ratschläge für die Schaffung einer Vielfalt von Einrichtungen auf allen Kategorien von Durchfahrtsstraßen. Eine vollständigere Tabelle, die die Fahrradstraße als eigene Kategorie umfaßt sowie zusätzliche Anmerkungen in bezug auf den Fahrradverkehr enthält, wird vorgestellt.

Das Radfahren ist auf den meisten Verkehrsflächen für den nicht-motorisierten Verkehr und auf den meisten Zufahrtsstraßen möglich. In einer Stadt können die meisten von ihnen durch ein Netz von Verteilerradwegen verbunden werden. Das Netz könnte auf Hauptstraßen oder primär auf Zufahrtsstraßen etabliert werden, wobei spezielle Einrichtungen zur Überquerung von Hauptstraßen vorzusehen wären.

Die Tabelle und das Netz – auch wenn letzteres nur geplant ist – sollten die gesamte Planung und Konzeption von Straßen in Städten in die richtige Richtung lenken.

DEUTSCH

NAČRTOVANJE KOLESARJENJA V ODNOSU DO URBANE CESTNE HIERARHIJE

Tabela Funkcije urbane hierarhije iz Inštituta za avtoceste in prevozniki priročnik Transport v urbanem okolju nudita nasvete za oskrbo raznolikih aktivnosti pri vseh kategorijah glavnih prometnih cest. Predstavljena je tudi izpopolnjena tabela, ki vključuje kolesarsko pot kot eno od kategorij, kot tudi dodatne zabeležke o kolesarjenju.

Kolesarjenje je praktično na vseh nemotoriziranih poteh, kot tudi na mnogih dostopnih, stranskih cestah; v mestu lahko vse to povežemo z omrežjem kolesarskih porazdeljevalcev. Kolesarsko omrežje je možno narediti na glavnih cestah ali prvotno na stranskih cestah, s posebnimi olajšavami pri prečkanju glavnih cest.

Tabela in to omrežje, čeprav je zaenkrat samo načrtovano, naj bi vodilo celotno načrtovanje in oblikovanje mestnih cest.

PLANNING FOR CYCLING RELATIVE TO AN URBAN ROAD HIERARCHY

1. CLASSIFICATION AND FUNCTIONS OF URBAN ROADS

A highway authority classifies a road according to what it intends the road's predominant activities to be. For an access road, vehicle access to residences, social uses by residents, walking, delivery of goods and servicing of premises predominate. Access roads feed local distributors, where vehicle movement predominates. Medium-distance traffic is expected to use district distributors, where speed limits may be higher, and long-distance traffic primary distributors, where maximum speeds are attained consistent with their design in the urban environment. Many authorities have a more finely graded classification.

The designation of the class of a road determines what traffic should be expected there, and any other uses, such as street trading, that are likely to occur. Further, it determines how different forms of traffic may be expected to behave, and indeed, how the users may expect to be able to behave safely. Thus the speed limit and the nature of the design of the street, which should signal the authority's expectations to users, follow from the designated class. This is the ideal relationship. In practice, an authority may not be able to implement a suitable design for several years. This is especially so where low speeds are appropriate. It has often been said that adequate traffic calming will take decades to implement.

The functions of roads classified in an "urban hierarchy" have been summarised in a table (Institution of Highways and Transportation, 1997). The functions include pedestrian movement, cycling, heavy goods vehicle activity, and motor vehicle access to individual properties. In addition to the road classes noted above, there are cycle routes, pedestrian routes, and pedestrian streets, all three classes intended for predominantly non-motor traffic.

2. CYCLE NETWORKS

Though the urban hierarchy table embraces cycle routes, intended for non-motor traffic, most cycling is likely to take place on roads available to motor vehicles. Within an urban road network, ideally all access roads will be comfortable for cycling. In addition, cyclists will require ways of crossing main roads - i.e. all roads classified as various distributors. In making provision for cyclists to cross them, through the use of signals or islands, preferred routes linking points of such provision are established, that can be followed across successive main roads. Consistently with the terms of the table, these routes are here called cycle distributors: most access roads link to them directly or via other access roads.

The establishment of a network of cycle distributors, or cycle network, may be achieved in various ways. One way (Institution of Highways and Transportation et al., 1996) is to link major sites of attraction, adopting the shortest routes. The resulting routes form the network.

A second method is to use primarily access roads for cycle distributors, selecting ones, as described above, that can be readily linked across main roads, and so form long routes. This was the method that was used in London. The method aims to be comprehensive, connecting any site via access roads to the network, from which any other site may be reached. It does not, however, fully achieve its aim because most sites on main roads are not included.

A third method is to convert all distributor roads to be also cycle distributors, so that the cycle network coincides with the main road network. Since most access roads give no problems to cyclists, this method provides a comprehensive

network. But providing for cyclists on main roads gives problems in the allocation of space, and for the full potential to be realised cyclists need to be able to turn right easily at most junctions on the network.

Since some cyclists are very likely to prefer to use main roads, because they are usually more direct, and other cyclists prefer to use minor roads because traffic is less intrusive, ultimately it will be advantageous to have a combination of both networks. This fourth method has the significant advantage that a complete network on minor roads can be established in a relatively short time; when most of it is finished, individual routes on main roads can be added, with priority according to their costs and advantages. The method has been little considered by cycle planners, but has featured in correspondence columns.

3. EXPANDING THE ROAD CLASSIFICATION TO INCLUDE CYCLE DISTRIBUTORS

We have seen how cycle distributors may be designated on access roads or local distributors. District distributors may also be used. If primary distributors are used, cyclists should be segregated. Even with the second method of creating a cycle network, with most of the length of cycle distributors on access roads, it is possible that suitable minor roads meet a main road at separate T-junctions rather than a cross-roads, so part of the cycle distributor will lie on the main road.

We must therefore be prepared for cycle distributors to be established on any class of urban road. As has been recognised in cycle auditing (Institution of Highways and Transportation, 1998), cyclists should be given a higher level of service on cycle distributors, i.e. on roads that are cycle pro-active. On main roads this means providing a higher level of safety, which is likely to be achieved by ensuring that cyclists have adequate space and can make off-side turns comfortably. On access roads the main difference is that cyclists should be able to maintain a high speed. This is important when there isn't a cycle network on main roads, in order to attract cyclists to the safer routes.

Thus, in principle, the table of functions of a road hierarchy should be expanded to give guidance for the design of roads that serve also as cycle distributors. An expansion is being developed by the author for the Cycling Project for the North West. It did not prove necessary to have separate columns in the table for the distinct classes of access road, i.e. that also serve and that do not serve as a cycle distributor; likewise for local, district, and primary distributors. Instead, notes for roads that serve also as cycle distributors are included, distinguished by italics, along with more general notes. In the current state of the expanded table the only rows affected are 'Predominant activities', where Cycling is added for access roads and local distributors; and 'Cycling' and 'Stationary vehicles'. E.g., for access roads there is added Normal parking should not obstruct a cycle meeting a car; and for district distributors Priority over side roads where possible. For cycling on access roads it is noted Might predominate over all other activities. This arises because if cycling achieves popularity, in particular on minor-road routes, most cycling will take place on the access roads that are selected to act as cycle distributors. The other principal use of these roads is only for access, so on many of them cycling will predominate. For this reason the further note Design should favour cycling is added.

The expanded road hierarchy table also modifies the classification of routes for non-motor traffic, which were cycle routes, pedestrian routes and pedestrian streets. It is possible to make a street for walking and cycling, only allowing motor vehicles to proceed slowly to make deliveries. Here it would be sensible to make a narrow carriageway for cycles: the street would be similar to a pedestrianised one with a distinct strip for cycling. Although cyclists might feel they had to go slower there, it could be an important link in the cycle network, for it can be difficult to establish a good route by-passing a town centre. Adding this possibility, and modifying others, four classes of thoroughfare or space are included in the table: pedestrian street or plaza; pedestrian path; cycle street; and cycle path or track.

Note that the purpose of the table is not only to indicate to cycling officers what is required, but also to advise their colleagues concerned with traffic what is needed to conform to a cycle network, whether established or only planned. The next section indicates how a network may be planned. An important point is that if the traffic on a cycle distributor increases, action may need to be taken to maintain its suitability for cycling. To this end a periodic review is needed.

4. PLANNING A CYCLE NETWORK ON MINOR ROADS

Many cycle networks will be established on minor roads and so common issues are discussed here. As noted in Section 2, main roads have to be crossed. If this is not easy, cyclists may be given assistance by introducing signals, islands, or even, as in Liverpool (Graham, 1988) a small roundabout, which slows down traffic on the major road. Section 3 noted in its first paragraph that establishing a cycle route across a main road sometimes requires using a section of the main road. In this case design should assure cyclists that they can expect the same level of safety as on the minor roads. Two ways to achieve this are to provide space

dedicated to cyclists, and to reduce speed on the main road, by traffic calming or other means.

Even being prepared to incorporate a section of major road in a cycle distributor in order to cross the road might not succeed in establishing a good cycle network. Where a neighbourhood served by minor roads is roughly rectangular and bordered by four main roads, ideally it will be crossed by at least two cycle distributors at right angles to each other. In some neighbourhoods one side has no connection with the access roads, so cycle access to the neighbourhood from one direction must be indirect: unless a bordering road is a cycle distributor, it will be more indirect than for cars. Because of the difficulty of finding good alignments for cycle distributors, while many main roads remain unattractive to many cyclists, safeguarding the alignments is important if they can not be adopted immediately. A planned network of cycle distributors has an important policy role.

A further policy, which can produce economies, is to do work that will help to create a cycle distributor wherever development takes place on its alignment. In some neighbourhoods there are two possible alignments. Both should be indicated on a map of the planned network. Then if fortuitous development enables one alignment to be established, appropriate work can be incorporated in the development. This is not to say that the other alignment should not be developed later, for this would enable some cycle journeys to be made more directly.

In selecting alignments for cycle distributors, an important aim is to make routes direct. It is also important to reduce hill climbing and the number of junctions that make cyclists stop. For each location where a cyclist has to slow virtually to a stop, because of traffic or a corner, his journey time is increased by the time it would take him to go about another 50 m (Graham, 1998). This is not just a scientific result: cyclists commenting on a cycle route in Liverpool noted corners as reducing the attractiveness of a route (Graham, 1988).

Many cycle network planners make a hierarchy of cycle routes. Cycle-friendly Infrastructure also advocates doing this, but there seems to be little point in it. There is not much difference in the journey times on a main road route and a good cycle distributor on minor roads; overtaking another cyclist is usually easier on a minor road than on a main one. Only if a route has a high cycle capacity, or, better, allows cyclists to maintain speed over large distances, can it be adequately distinguished to be at a higher level in a hierarchy. The significant difference between cycle distributors lies in the classes of road along which they lie, which strongly affect the travel environment of the cyclist, in particular the noise, fumes, and his need to give attention to the traffic and how sociable he can be with other cyclists. These are likely to be major determinants of route choice for an individual cyclist.

5. SOME EXPERIENCE OF PLANNING CYCLE NETWORKS

In starting to plan a cycle network it is very helpful to have a street map indicating main roads. These divide the town or district into "cells". For a network on minor roads, roads to serve as cycle distributors have to be found across cells, that can connect them to neighbouring cells. This is an effective prescription. When the author was given the main road network for the London Borough of Hammersmith and Fulham, he produced the same cycle network as the borough's officers had planned.

There are places where main roads have to be used as cycle distributors. A common, important, case is providing access to town centres, which in Britain, even in Nottingham which has an extensive network, has not been adequately tackled. The solution could be by providing cycle lanes or traffic calming. In Nottingham it is partially solved by using a service road, but this does not reach the centre. In Wallasey, a proposed cycle network includes cycle lanes in the vicinity of the town centre. This town, in the Metropolitan Borough of Wirral, is connected to neighbouring towns only by four main roads, so the network initially planned includes provision to use one of these, with cycle lanes.

Some cells are very difficult to penetrate. E.g., in Wallasey two main roads meet at a small angle, and short streets run between them without connecting to any others, each one like the crossbar in the letter 'A'. Such streets can only be accessed from the cycle network by establishing cycle distributors on the main roads. In such cases the unfortunately situated streets may be omitted from the initial network, and priority given to developing cycle distributors on main roads, which will eventually connect these streets. Planning a network for a town centre is very demanding. It can not be done well unless outline designs are made. Alternatives have to be considered. It seems that the work involved could take as long as the work for the rest of the town.

In some places, such as the Woodchurch estate in Wirral and north Chelmsford, the cells were large, containing many access roads. In these places a few roads attracted a lot of the local traffic and did not properly fulfil the role of access roads. Though they had helpful alignments, they were not suitable for cycle distributors unless they had special treatment, perhaps traffic calming, which could however make problems in diverting traffic. Acceptable solutions will require careful consideration and good consultation with local residents.

A similar situation was found in the Clifton estate in Nottingham, which is very large and was built about 1950. The principal roads of the estate, which could be classified as local distributors, were regarded as access roads by the cycle planners in linking it to the cycle network, so no cycle distributors or facilities were provided in the estate. By the 1990s traffic had increased so much that adult cyclists often rode on the pavements of the principal estate roads. The lesson from these cases is that some minor roads attract a lot of traffic and can not simply be designated as cycle distributors.

In all cases, though a lot of potential in a proposed cycle network can be seen from a map, plans can only be made from visiting sites to appreciate their problems and probable solutions in detail.

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PROMOTING THE CYCLE TRAFIC IN TWO VIENNESE DEPARTMENTS FROM THE VIEW OF THE CYCLE LOBBYING GROUP

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ENGLISH CYCLE PROMOTION CAMPAIGN IN TWO VIENNESE DISTRICTS FROM THE PERSPECTIVE OF THE CYCLISTS' LOBBY

In 1997/1998, a cycle promotion campaign was implemented in two districts of the City of Vienna (9 and 13). The share of bicycle traffic in the two districts concerned is quite similar to the average reported for the whole of Vienna (3-4%). As an initial measure, interviews were conducted (residents, cyclists), and approximately 70 one-way streets were opened to cyclists. From the cyclists' lobby's point of view, this particular campaign is of great interest because it yielded relatively little effect in spite of high financial costs.

Positive approaches in the framework of the promotion campaign:

- Opportunity to order cycle maps of Vienna (excessively complicated ordering procedure!)
- Provision of information to pupils of secondary modern schools and high-schools
- Idea to create a "Bike City" as a contact point for all matters relating to cycling
- 2 discussion events (incl. a small outdoor exhibition)

Negative experience from our point of view - recommendations for future promotion campaigns:

- The campaign attracted hardly any attention from the media at all. The provision of information was not properly coordinated.
- An existing infrastructure is an essential precondition.
- Increased presence in the public space (posters, billboards etc.) should be ensured.
- Direct marketing incl. provision of selected advice to residents is required.
- Incentives must be provided for people to change their behaviour (free bike etc.).
- Bicycle parking facilities are required, especially at the place of residence.

DEUTSCH FÖRDERUNG DES RADVERKEHRS IN ZWEI WIENER BEZIRKEN AUS SICHT DER RADFAHRIOBBYISTEN

Eine Werbeaktion in zwei Wiener Bezirken (9 und 13) sollte 1997/1998 den Radverkehr fördern. Der Radverkehrsanteil liegt in etwa im Wiener Durchschnitt (8-4%). Als erste Maßnahmen wurden Befragungen (Anrainer, Radfahrer) und das Öffnen von rund 70 Einbahnstraßen für den Radverkehr durchgeführt. Aus Sicht der Radfahrervertretung ist diese Aktion deshalb interessant, weil die Auswirkungen trotz hohem finanziellen Aufwands als relativ gering zu bezeichnen sind.

Positive Ansätze im Rahmen der Förderaktion:

- Radnetzpläne von Wien konnten bestellt werden (allerdings viel zu komplizierter Bestellvorgang)
- Informationen der Haupt- und Mittelschulen
- Idee einer "bike city" als Anlaufstelle für Alles, was mit Radfahren zu tun hat
- 2 Diskussionsveranstaltungen (incl. eine kleine Straßenausstellung)

Negative Erfahrungen aus unserer Sicht - Ansätze für künftige Förderprogramme:

- medial kaum wirksam bzw. waren die Informationsschübe nicht koordiniert vorhandene Infrastruktur ist Voraussetzung
 - stärkere Präsenz im öffentlichen Raum (Tafeln, Plakate, etc.)
 - direktes Marketing mit ausgewählter Beratung der Bewohner erforderlich Anreize zur Verhaltensänderung (Gratisrad etc.)
- Absteilmöglichkeiten sind vor allem auch am Wohnort notwendig

PROMOCIJA KOLESARSKEGA PROMETA V DVEH DUNAJSKIH OKROŽJIH, S STALIŠČA KOLESARSKEGA LOBIRANJA

V letih 1997/98 so v dveh dunajskih okrožjih (9. in 13.) s pomočjo reklamnih akcij promovirali kolesarski promet. Delež kolesarskega prometa v teh okrožjih je v dunajskem povprečju (3-4%). Najprej so izvedli ankete (stanovalci, kolesarji) in odprli okoli 70 enosmernih cest za kolesarje. S stališča deleža kolesarjev v prometu je ta akcija zanimiva zato, ker je bil učinek kljub visokim finančnim stroškom relativno majhen.

Pozitivni zasnutki v okviru akcije:

- lahko so naročili načrte za kolesarsko mrežo Dunaja (toda postopek naročanja je preveč zapleten)
- informacije so bile podane meščanskim in srednjim šolam
- ideja, da bi ustanovili "bike city" kot središče za vse, kar ima opravka s kolesarstvom, je botrovala dvema diskusijama (vključno z razstavo na cesti)

Negativne izkušnje, z našega stališča – spremembe pri bodočih promocijskih programih:

- medijsko slabo učinkovito, oz. nekoordinirano podajanje informacij medijem
- predpostavka mora biti obstoječa infrastruktura
- močnejša navzočnost v javnem prostoru (table, lepaki)
- potreben je neposredno trženje s svetovanjem stanovalcem
- vzpodbude k spremembi ravnanja (brezplačno kolo...)

FÖRDERUNG DES RADVERKEHRS IN ZWEI WIENER BEZIRKEN AUS SICHT DER RADFAHRLOBBYISTEN

Im Jahr 1997 wurden spezielle Fördermaßnahmen zum Radverkehr für zwei Wiener Gemeindebezirke (9. Bezirk - Alsergrund in Zentrumsnähe und 13. Bezirk - Hietzing am westlichen Stadtrand) beschlossen. An Infrastrukturmaßnahmen wurden vor allem im Sommer 1997 Einbahnen für den Radverkehr geöffnet. Während in Hietzing diese Anlageart bereits bei 6 km Einbahnen bestand (zusätzliche Öffnung von rund 6,9 km Einbahnen), war diese Maßnahme in 6,5 km Einbahnen des Alsergrunds relativ neu. Weit ausgeprägter waren sogenannte „soft policies“, also Maßnahmen zur Förderung des Radverkehrs, welche das Image des Radfahrens heben sollen. Unter anderem wurde eine „bike city“ im 9. Bezirk installiert, Informationsmaterial an die Haushalte geschickt, jeweils eine Diskussionsveranstaltung durchgeführt etc. Als Voraussetzung für die Radoffensive wurden sowohl im Jahr 1997 als auch im darauffolgenden Jahr Befragungen der Einwohner beider Bezirke und Radfahrer im Straßenraum durchgeführt /1/. Die ARGUS ist als Lobbygruppe der Radfahrer naturgemäß an derartigen Aktionen interessiert und hat die gesamte Radoffensive unterstützt, aber auch kritisch verfolgt. Die vorliegende Studie analysiert im wesentlichen die Befragungen. Weiters sollen bereits während der Aktion geäußerte Kritikpunkte durch die Befragungen erhärtet werden. Daraus sollen Verbesserungswünsche aus Sicht der Radfahrervertretung für künftige Werbeaktionen zum Thema Radfahren abgeleitet werden können.

Die Einwohnerzahl liegt in beiden Bezirken bei rund 50.000. Im 13. Bezirk ist eine etwas stärkere Überalterung gegeben. Der wesentlichste Unterschied der zwei Bezirke besteht in baustrukturellen Gegebenheiten. Der 9. Bezirk ist durch einen hohen Anteil alter, mehrgeschoßiger Wohnbauten gekennzeichnet. Im 13. Bezirk dominieren Häuser jüngeren Baualters sowie überdurchschnittlich viele Gebäude mit 1-2 Wohnungen (rund 1/3 aller Gebäude). Hinsichtlich der Arbeitsbevölkerung ist der 9. Bezirk ein extrem starker Einpendelbezirk. Bei den Unfalldaten liegt der 9. Bezirk etwa doppelt so ungünstig wie der 13. Bezirk. Dies betrifft sowohl alle Personenschadensunfälle sowie die Radverkehrsunfälle. Das Radverkehrsnetz Anfang 1997 ist im 13. Bezirk längenmäßig mit 32,7 km stärker ausgebaut (dies entspricht 0,58 m/EW) als der 9. Bezirk mit 6,9 km (dies entspricht 0,16 m/EW). Allerdings sind im 13. Bezirk 67 % verkehrsberuhigten Bereichen/Radrouten zuzuordnen. Im Zuge der Radoffensive wurden 1997 zusätzlich 8,3 km Radverkehrsanlagen (davon 6,9 km Radfahren gegen die Einbahn) installiert. Im 9. Bezirk dominierten Anfang 1997 bauliche Radwege bzw. Geh und Radwege mit rund 40 % der Gesamtlänge. Das Öffnen von Einbahnen verlängerte das Gesamtnetz im Jahr 1997 um 6,4 km auf insgesamt 13,3 km /2/.

Die Auswertung der Haushaltsbefragung in den beiden Musterbezirken ergibt jeweils durchschnittliche Radverkehrsanteile. Im Alsergrund liegt er etwas über dem Wiener Durchschnitt mit rund 5%. In Hietzing liegt der

Anteil der Radfahrer sogar unter dem Wiener Durchschnitt mit rund 3%. Es dominiert der Freizeitverkehr wie sich auch bei der Befragung der Radfahrer bestätigt hat. Der Einkaufsverkehr spielt nur eine untergeordnete Rolle. Nicht nur die Bezirke Alsergrund und Hietzing zeigen unterschiedliches Verhalten, auch innerhalb der Bezirke können teilweise recht deutliche Differenzen aufgezeigt werden.

Die theoretischen Potentiale des Radverkehrs sind in der Regel weit überbewertet. Bei der Frage „wie viel/wie oft würden Sie mit dem Radfahren wenn,.....“ entspricht die Euphorie nicht der tatsächlichen Verhaltensänderung selbst bei optimalen Bedingungen für den Radverkehr (Infrastruktur, Fahrradklima etc.). Aufschlußreicher ist die Frage nach den Hinderungsgründen der Nichtnutzung (bzw. warum wird das Rad nicht öfter genutzt). Rund 1/3 der Befragten besitzt gar kein Rad. Auffallend ist im 9. Bezirk die geringe Quote der Besitzer bei den unter 25 Jährigen (58%). Jene rund 10 % in den Bezirken 9 und 13, welche keine besonderen Gründe anführen können, also wahlfrei sind, können als kurz bis mittelfristiges Potential für den Radverkehr gesehen werden. Nicht zu übersehen ist bei der Prognoseabschätzung der mögliche Verlust von Radfahrern an andere Verkehrsmittel. Ohne Verbesserung der Radinfrastruktur könnte bei weiterführenden Imagekampagnen von einem Zuwachs in den beiden Musterbezirken von rund 2-4% ausgegangen werden.

Bei der spontanen Beantwortung zu fehlenden Einrichtungen dominiert der Wunsch nach Radwegen (55 bis 65%). Weitere Kritikpunkte betreffen Abstellplätze (40 bis 60 % haben keine Möglichkeit einer gesicherten Abstellmöglichkeit) und das Öffnen von Einbahnen. Bei konkreten Vorschlägen werden die Maßnahmen wesentlich ausgewogener beurteilt. Interessant ist, daß rund 20 % auch Radverbindungen, welche zu Lasten von Parkplätzen gehen, akzeptieren (im 13. Bezirk nur 15 % - fehlende Parkraumbewirtschaftung). Auffallend ist weiters der Umstand, daß bei allen Maßnahmen eine höhere Präferenz der Realisierung für weiter entfernte Gebiete („ganz Wien allgemein“ anstelle in der „Wohngegend“) besteht.

Die parallel durchgeführte Radfahrerbefragung in den beiden Bezirken ergibt ein analoges Bild. Von den an den Grenzen des 9. Bezirk befragten Radfahrern fährt mehr als die Hälfte von und zur Arbeit bzw. Ausbildungsstätte (es überwiegen die täglichen und regelmäßigen Fahrradnutzer mit einer ausgeprägten Unzufriedenheit des Angebotes), im 13. Bezirk sind hingegen drei Viertel der Fahrten Freizeitwege (es dominieren Gelegenheitsfahrer mit hoher Zufriedenheit). Die Studenten dominieren zur Studienzeit den Radverkehr in Wien im Bereich der Universitäten, also besonders im 9. Bezirk. Sport und Gesundheit ist für mehr als die Hälfte ein Mitentscheidungsfaktor bei der Wahl des Verkehrsmittels Fahrrad. Als weitere Gründe werden Schnelligkeit, Billigkeit des Fahrrades und Freizeitvergnügen von den Radlern geschätzt. Im 9. Bezirk fühlen sich nur 40% der Radler sicher, im 13. Bezirk hingegen drei Viertel. Wobei häufige Nutzer und Alltagsfahrer die Sicherheit geringer einschätzen. Die Sicherheitsdefizite liegen bei fehlender Radinfrastruktur und Gefährdungen durch den Autoverkehr.

Die Gegenüberstellung der einzelnen Befragungen zeigt insgesamt ein unbefriedigendes Ergebnis. Es zeigt sich zwar eine deutliche Zunahme der positiven Bewertung des Radfahrens insgesamt um rund ein L (vor allem bei den jüngeren Interviewpartnern). Folglich hat alleine die Berichterstattung einen positiven Effekt erzielt, auch wenn gerade diese PR-Arbeit als nicht optimal zu bezeichnen ist, wie andere Befragungsergebnisse belegen. Die Hemmschwelle, das Fahrrad auch zu nutzen hat sich jedoch kaum geändert. Nach wie vor dominiert beim Zweck von Fahrradwegen der Freizeitweg (13.Bezirk 85% aller Befragten; 9. Bezirk 74%). Vor allem die älteren Einwohner sehen im Fahrrad nach wie vor kein vollwertiges Verkehrsmittel. Damit hat die Fahrradoffensive ein wichtiges Ziel der Meinungsbildung klar verfehlt. Jene, die das Fahrrad häufiger - also auch für Berufs -und Ausbildungswege - nutzen, sind mit dem Angebot (Radverkehrsanlagen, Information, Leitsystem, Abstellanlagen, etc.) extrem unzufrieden. Die Gefahr, diese Personen als Radnutzer zu verlieren, sollte nicht unterschätzt werden.

Bei dem Wunsch nach Maßnahmen hat es nur geringe Verschiebungen in den Wertigkeiten gegeben. Ein Großteil möchte durchgehende Radwege (33 % in beiden Bezirken). Allerdings ist durch die Radoffensive die Aufmerksamkeit für Details erhöht worden (bessere Beschilderung/Markierung etc.). Durch das Öffnen von Einbahnen im 9. Bezirk ist auch dort der Wunsch nach weiteren Einbahnöffnungen leicht angestiegen - die Akzeptanz dieser Anlageform nimmt mit der Häufigkeit der Nutzung zu. Die Abfrage der tatsächlich durchgeführten Verbesserungsmaßnahmen wird vor allem bezüglich der bauliche Radwege weit überbewertet (im 9. Bezirk gar keine neuen Radwege, im 13. Bezirk nur geringfügige Erweiterung, aber 30 bis 40 % der Einwohner glauben dies). Andererseits sind fast alle Maßnahmen zur Radoffensive mehr oder weniger unbekannt. Einzige Ausnahme stellen die Einbahnöffnungen im 9. Bezirk dar - fast 50 % bemerkten diese auffällige Veränderung in ihrer Wohngegend. Im 13. Bezirk konnten fast 40 % der Bewohner keine Maßnahmen

zur Fahrradförderung im vergangenen Jahr erkennen. Eindeutig ist der Wunsch nach mehr Information der Radfahrer. Als positiv ist eine verstärkte Medienpräsenz und Diskussion unter Politikern/Planern und Interessierten zu vermerken, die auch die Einwohner bemerkt haben. Weiters hat sich die Akzeptanz der Anlageform „Radfahren gegen die Einbahn“ deutlich erhöht.

Aus der Analyse der Radoffensive in den Bezirken 9 und 13 und Erfahrungen anderer Städte zu diesem Thema hat die ARGUS einige Schlußfolgerungen für künftige fahrradfördernde Aktionen zusammengestellt:

Rahmenbedingungen (es kostet Geld, bedeutet personelle Ressourcen, erfordert professionelle Aufbereitung);

Planung der Aktion als Gesamtpaket (Umwelt und Verkehrspolitik müssen über einen längeren Zeitraum unter Einbindung des gesamten Umweltverbundes vernetzt werden, aktuelle Probleme sollten für die Thematisierung des Radfahrens herangezogen werden - z.B.: Ozonbelastung, CO2-Problematik, Lärmbelastung, Parkraumbewirtschaftung, Verkehrsstau auf Wiener Straßen, etc., vorteilhaft ist die Einbindung von Fahrradorganisationen);

Bezirks- bzw. Gemeindeauswahl (welches Radverkehrsnetz steht zur Verfügung, Radverkehrsanteil, Daten, politische Akzeptanz);

Formulieren von Zielen (diese Ziele sollen die positiven Merkmale des Radfahrens herausstreichen - Beispiele: Das Fahrrad soll als vollwertiges Verkehrsmittel auf kurzen Wegen anerkannt werden, Freizeitradfahrer sind für Berufsfahrten zu gewinnen, Erhöhung des Einkaufsverkehr mit dem Fahrrad, die Verkehrssicherheit ist zu erhöhen etc.)

Verbesserung der Infrastruktur während der Aktion (Radverkehrsanlagen, Information, Leitsystem, Abstellanlagen, etc.) und Dokumentation;

Handlungsorientierte Mobilitätsberatung (das Radfahren einfach ausprobieren -Wohnbevölkerung z.B. 4 Wochen ohne Auto, Radfahrtraining, Einpendler - Arbeitspendler, Schulpendingler eine Vielzahl an Aktionen an Schulen und in Betrieben möglich: Mobilitätsberatung, reine Informationsveranstaltungen, Verbesserungsvorschläge für Bekleidung, Transport, Abstellmöglichkeit, etc.);

Stärkere Einbindung der Bevölkerung (fixe Anlaufstelle, Diskussionen, Ausstellungen in Wohngebieten, Veröffentlichung der begleitenden Untersuchungen wie Umfragen oder Projekte von Fachplanungen, Fahrradplan an alle Anrainer schicken);

Identifikation von Stadtplanung und Politikern;

Aufklärung der Radfahrer vor Ort (Aktionen im Bereich von Radverkehrsanlagen, Aufklärung über die Straßenverkehrsvorschriften, Kontrolle des Fahrradzustandes)

Auswahl sonstiger Aktionen (Anreize schaffen z.B. Codierung von Fahrrädern, Events vgl. Wettfahrt Auto/Fahrrad, Fahrradtage und Fahrradmesse mit Einbindung der Wirtschaft, Gratisboxen bei ÖV-Knoten, Sportliche Events z.B. Radmarathon, Einbindung der Schulen mit Ideenbörsen oder Projektarbeiten, Verbindung zur Kultur wie Fotowettbewerb)

Informationsfluß (mehrere Medien, öfters bekanntmachen, laufende Themen zum Radfahren über Umleitungen oder Projekte, öffentlicher Charakter - darf nicht mit Werbeaussendungen verwechselt werden, Manifestierung im öffentlichen Straßenraum, Cooperate Identity, Rad-Rundfahrt mit Journalisten, Beamten und Politikern).

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WEDNESDAY

THE SAFETY BENEFITS OF CYCLE LANES

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ENGLISH

THE SAFETY BENEFITS OF CYCLE LANES

Cycle lanes are a cheap and easy means of providing for cyclists to both encourage cycling and reduce cycle accidents. This paper investigates changes in accident rates and type at cycle lane sites in Oxford where they have been the main method of providing for cyclists within the existing road network. The benefits and disbenefits are discussed in detail. The paper will assist discussion of the issues relating to segregation or non-segregation of cyclists, from other traffic, in

DEUTSCH

SICHERHEITSVORTEILE VON RADSPUREN

Die Einrichtung von Radspuren ist eine billige und einfache Methode, die Radfahrer zu berücksichtigen, um einerseits das Radfahren zu fördern und andererseits die Fahrradunfälle zu reduzieren. Dieses Referat analysiert Änderungen der Unfallzahlen und Unfallarten auf Straßen mit Radspuren in Oxford, wo diese Radspuren die Hauptmaßnahme darstellten, um den Radfahrern im bestehenden Straßennetz Platz einzuräumen. Vorteile und Nachteile werden im Detail diskutiert. Das Referat wird Impulse für die Diskussion der Frage, ob die Radfahrer in städtischen Gebieten von den anderen Verkehrsteilnehmern getrennt werden sollen, liefern.

SLOVENSKO

VARNOSTNE KORISTI KOLESARSKIH POTI

Kolesarske poti so cenejši in lažji način zagotavljanja vzpodbujanja kolesarstva in zmanjševanja kolesarskih nesreč. Ta prispevek raziskuje spremembe v odstotkih prometnih nezgod ter tipe kolesarskih poti po predelih Oxforda, ki so glavna metoda pri preskrbi kolesarjev v okviru obstoječega cestnega omrežja. Podrobno so obdelane koristi in slabe strani tega omrežja. Prispevek bo v pomoč pri razpravi danih zaključkov, ki se nanašajo na vprašanje oddvojitve ali ne-oddvojitve kolesarjev od ostalega prometa v urbanih območjih.

THE SAFETY BENEFITS OF CYCLE LANES, NIGEL COATES, OXFORD CITY COUNCIL, UK.

1. INTRODUCTION

1.1 This paper investigates the benefits given to cyclists through the introduction of on-carriageway cycle lanes. The changes in injury accident numbers will be the main measure of success, or not. Data for this study comes from Oxford where 25 kilometres of cycle lane have been introduced in the last 20 years.

2. CYCLE LANES: DEFINITION AND DEVELOPMENT

2.1 A cycle lane is an area of carriageway set aside, with a painted line, for the use of cyclists. The concept of a cycle

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lane was first formally defined in the UK by the Department of Transport (DoT) in 1978. Cycle lanes from the start were seen as an inferior form of provision, with preference given to segregated cycle routes or cycle tracks.

2.2 The DoT advised that cycle lanes should only be provided where there is sufficient width left for other traffic, and that cycle lanes should not be carried across side road junctions. It is in these very locations that cyclists are subject to the greatest danger. The advice regarding junctions was based on the idea that it will encourage drivers to turn at the junction and not encroach on the lane, and that the cycle lane marking will be used as an advance give way line, drivers will pull forward and block the lane.

3. THE BENEFITS AND DISBENEFITS OF CYCLE LANES.

3.1 The main benefits of cycle lanes can be summarised as follows:

- a) The presence of cyclists is made more obvious to other road users.
- b) They enable cyclists to legally and easily overtake on the inside of other traffic.
- c) The perceived width of the carriageway is narrowed which, it has been suggested, can slow traffic and reduce accidents.
- d) Unlike cycle tracks, cyclists do not lose their place on the main carriageway which can result in the need to give way at side road junctions and complicated manoeuvres to turn right.
- e) They can provide for cyclists on the roads the majority want to use (in Oxford, despite the provision of back street cycle routes, about 80% of cyclists still use the parallel main road).
- f) They are relatively cheap to introduce.

3.2 The disbenefits of cycle lanes are:

- a) They are normally in the area of carriageway next to the kerb which is often the least well maintained.
- b) A sense of false security can be created for both cyclist and motorist.
- c) A parked or stopped vehicle removes some of the benefits of a cycle lane.
- d) A cycle lane may be treated by pedestrians as an extension to the footway.
- e) There is potential that cycle lanes may actually increase certain accidents involving cyclists.

4. THE DEVELOPMENT OF CYCLE LANES IN OXFORD

4.1 In the early 1970's Oxford rejected plans for major road building in the city and adopted the Balanced Transport Policy. What this effectively meant was restricting cars and promoting public transport and encouraging travel on foot and by bicycle. The policies relating to cycling included the introduction of cycle lanes, as well as the development of off carriageway cycle tracks and cycle routes along quiet backstreets.

4.2 Nearly 18 kilometres of advisory cycle lane were introduced in Oxford in two phases at 11 sites in 1981 and 10 sites in 1986. These predominantly followed sections of Oxford's main radial routes and were justified on the two grounds of reducing accidents and encouraging cycling by developing a cycle route network for the city. A further 7 kilometres have been introduced since.

4.3 A study in 1990 indicated that cycle lanes seemed to be having a limited, or at least variable, effect at reducing cyclist accidents. Proposals were put forward for both making the lanes more conspicuous and addressing the accident record at junctions. These comprised the use of coloured surfacing, the introduction of mandatory cycle lanes and marking cycle lanes across junctions.

5. DO CYCLE LANES REDUCE ACCIDENTS?

5.1 The total number of accidents along the lengths of road with cycle lanes before and after they were introduced indicates whether a perceived narrowing of the carriageway really does reduce traffic speeds and therefore accidents (benefit c)). The figures indicate some success with a 4% reduction in total accidents at phase 1 sites and a 9% reduction at phase 2 sites.

5.2 Do cycle lanes make the presence of cyclists more obvious to other road users and therefore reduce accidents involving cyclists? (benefit a)). The figures show a 29% increase in total cycle accidents at phase 1 sites and a 2% decrease at phase 2 sites. This was during a period when city wide cycle accidents were increasing by 20% and 17% respectively. Cycling levels at the inner cordon points around the city centre increased during the early 1980s (the time when the phase 1 cycle lanes were being introduced), levelled during the mid 80s (about when the phase 2 lanes were introduced) and have stayed fairly constant, at around 20%

of flow ever since. Oxford wide the growth of cycling was curtailed in the mid 1980s, the roads with cycle lanes appear to have resisted this.

6. CHANGES IN ACCIDENT TYPE

6.1 The accident data used in this section is that involving cyclists travelling on the side of the road where a cycle lane has been introduced, firstly total accidents then looking at the types in detail. Less than three years of before data is available for the phase 1 sites but the phase 2 sites benefit from six and a half years of before and after data. A total of 62 accident records at the phase 1 sites and 211 at the phase 2 sites are included. The accident periods are:

Phase 1 Sites:		Phase 2 Sites	
Before	January 1979 to October 1981 (34 months)	January 1980 to June 1986	(78 months)
After	November 1981 to August 1984 (34 months)	July 1986 to December 1992	(78 months)

Accident data for the period since, January 1993 to December 1997 (60 months) is also included.

6.2 If cycle lanes are not carried across junctions it is unlikely that junction accidents involving cyclists would be prevented and may even increase. The total changes in non junction accidents is variable, at seven sites there has been an decrease in accidents, at seven sites an increase and four sites have remained the same. The numbers of junction accidents have increased at virtually all sites of the phase 1 lanes and at all but two of the phase 2 sites. It would therefore appear that introducing cycle lanes but not marking them across junctions could increase cycle accidents at junctions.

6.3 The data presented below is a combination of accidents at phase 1 and phase 2 sites and one of the sites introduced since. The accident types, seven away from junctions and eight at junctions, are described in detail, along with the change in accidents following introduction of the cycle lanes and a suggestion of the reason for this.

Non junction accidents:

Type 1 - Cyclist pulls out from side of the road, to turn right, into the path of a motor vehicle.

Accidents: 16 before Analysis: This would suggest that the cycle lane makes motorists more
7 after (11 since) aware of cyclists being at other places on the carriageway.

Type 2 - Motor vehicle conflicts with cyclists while overtaking.

Accidents: 17 before Analysis: Cycle lanes should encourage motorists to give
12 after (23 since) cyclists more space preventing this type of accident.

Type 3 - Cyclist riding into the back of a parked vehicle.

Accidents: 2 before Analysis: All cycle lanes have waiting restrictions but vehicles stopping in
10 after (7 since) them is a real problem, cyclists appear to adopt a false sense of security.

Type 4 - Car door opens into path of cyclist

Accidents: 9 before Analysis: Although vehicles are stopping in cycle lanes
3 after (8 since) people emerging from them are taking more care.

Type 5 - Vehicle pulls out from kerb into path of cyclist.

Accidents: 4 before Analysis: Further evidence that a driver stopping at the kerb
2 after (2 since) is more aware of the presence of cyclists.

Type 6 - Vehicle travelling in opposite direction crosses carriageway into path of cyclist.

Accidents: 0 before
1 after (0 since)

Type 7 - Pedestrian steps into cycle lane in path of cyclist.

Accidents: 0 before Analysis: Some evidence of the cycle lane being treated as
1 after (3 since) an extension to the footway.

Junction accidents.

Type 1 - Vehicle turns left into junction across path of cyclist.

Accidents: 8 before Analysis: Evidence that vehicles are turning at the junction
10 after (9 since) and not before it, but cyclists are not being considered.

Type 2 - Vehicle turns right into junction across path of cyclist.

Accidents: 7 before Analysis: An alarming increase in this type of accident which suggests
13 after (15 since) that the cycle lane, giving cyclists more freedom, actually contributes to this.

Type 3 - Vehicle turns left out of junction into path of cyclist.

Accidents: 4 before Analysis: As would be expected, the provision of cycle lanes,
5 after (4 since) truncated at junctions, does not reduce this type of accident.

Type 4 - Vehicle turns right out of junction into path of cyclist.

Accidents: 17 before Analysis: No benefit, and some evidence that the extra
20 after (11 since) freedom given to cyclists actually makes the situation worse.

Type 5 - Cyclist turns right out of junction into path of vehicle approaching from the right.

Accidents: 6 before Analysis: I don't know why this should be the case, more space next
0 after (2 since) to the kerb created by cycle lanes is possibly one reason.

Type 6 - Cyclist turns right into junction across path of vehicle approaching from the opposite direction.

Accidents: 1 before
3 after (0 since)

Type 7 - Cyclist turns right out of junction into path of vehicle approaching from the left.

Accidents: 2 before
1 after (0 since)

Type 8 - Cyclist turns left out of junction into path of vehicle approaching from the right.

Accidents: 2 before Analysis: Again, false security possibly created by the cycle .
3 after (0 since) lane.

7. CYCLE LANES ACROSS JUNCTIONS

7.1 In London Road, Headington the first attempt was made to address the junction accident problem. The length of road is through an important suburban shopping area carrying traffic from London heading towards Oxford City centre. Two way traffic flow 7am to 7pm is about 15000 vehicles a day, 800 (5%) of which are cyclists.

7.2 Advisory cycle lanes were marked over this length to provide a route from the roundabout at the junction with the A40 to the city centre. The markings were not initially carried across junctions but in April 1992, with the addition of light brown coloured surfacing, this was rectified at nine of the junctions. The accident record for this length of road, before and after the cycle lanes were initially introduced is as follows:

(before is January 1980 to June 1986, after is July 1986 to December 1992).

Junction Accidents			Non Junction Accidents		
	Before period	After period		Before period	After period
Type 1	4	5	Type 1	1	0
Type 2	2	2	Type 2	1	1
Type 3	1	2	Type 3	1	0
Type 4	3	2	Type 4	4	0
Type 8	0	2	Type 5	1	0
Total	10	13	Total	8	1

The cycle lanes through Headington had a beneficial effect on non junction accidents, particularly type 4, involving a cyclist riding into an open car door. Junction cycle accidents, however, increased as a result of marking the cycle lanes.

7.3 The introduction of cycle lane markings across junctions in 1992 has been successful in reducing accidents at these sites as shown below:

Junction Accidents		
	Before period (1/1988 - 4/1992)	After period (5/1992 - 8/1996)
T		
ype 1	5	3
Type 2	3	1
Type 3	1	0
Type 4	3	3
Total	12	7

Although junction accidents are still occurring the cycle lanes across junctions are showing benefits in reducing these. Particularly drivers turning in to side roads are taking more account of cyclists.

8. DISCUSSION AND CONCLUSIONS

8.1 Recent research into the safety of cycle lanes has not shown very promising results. Dutch research concludes that it is safer not to provide a cycle lane than to provide one and that major junctions are safer if the connecting road does not have cycle lanes. The Cyclists Touring Club, based on American research, suggest that, on major roads at least, cycle lanes do not provide any positive safety benefits. But cycle lanes are popular and a recent study suggests that perceived risk may be reduced through their provision. They do give cyclists clear benefit over other vehicles, particularly in congested urban centres, such as Oxford. Provided, therefore, they do not actually increase accidents cycle lanes should be provided. This study shows that there are some accident saving benefits along the lengths of road which have cycle lanes but that there is a risk that accidents may increase at junctions.

8.2. This study has shown also that marking cycle lanes and not carrying them across junctions actually increases cycle accidents at those locations.

CYCLE PATH PLANNING: THEORY AND PRACTICE

Dipl. Ing. Norbert Kotzurek

CYCLE PATH PLANNING: THEORY AND PRACTICE

In 1990 a book on the role of bicycles in traffic, „Das Fahrrad im Verkehr“, was published by the Austrian Traffic Club VCÖ. A second, considerably modified edition was published in 1995 under the title „Straßen zum Radfahren“ (Roads for Cycling). This book presents exemplary cases of cycle infrastructure design, e.g. facilities for the crossing of obstacles or bicycle parking facilities. Another chapter is dedicated to the advantages and disadvantages of cycle lanes and unidirectional / bidirectional cycle paths. The author prefers on-road cycle lanes and is strongly opposed to bidirectional cycle paths. He writes: „Bidirectional cycle paths accompanying roads must be avoided due to an extremely high risk of accident.“

The cycle paths of Graz are mostly bidirectional. Apart from a few individual cases (e.g. Keplerstraße), they have proved rather favourable. Blindly preferring cycle lanes, the VCÖ seems to ignore the fact that the layout of many streets actually excludes the establishment of cycle lanes. Examples such as them intersection Glacisstraße - Elisabethstraße - Fischerallee in Graz show that cycle lanes

- Consume significantly more space than bidirectional cycle paths,
- Involve a higher risk in the section immediately in front of traffic intersections than bidirectional cycle paths
- Cannot be established in the case of mixed lanes for motorised traffic (e.g. lanes shared by left-turning traffic and vehicles going straight ahead).
- Would require a separate phase where traffic is regulated by traffic lights.

This shows that Graz has, at the time when cycle promotion was given top priority upon an initiative of Erich Edegger, opted for the appropriate solution.

RADVEG-PLANUNG: THEORIE UND PRAXIS

1990 hat der VCÖ (Verkehrsclub Österreich) ein Buch mit dem Titel "Das Fahrrad im Verkehr" herausgegeben, 1995 erschien eine zweite stark geänderte Auflage unter dem Titel "Straßen zum Radfahren". Darin zeigt der Autor gute Beispiele für die Anlage von Radverkehrsanlagen, z.B. Querungshilfen oder Fahrrad-Abstellanlagen. Ein Kapitel handelt von den Vor- und Nachteilen von Radfahrstreifen, Ein- und Zwei-Richtungs-Radwegen. Der Autor hat eine Vorliebe für Radfahrstreifen auf der Fahrbahn und eine starke Abneigung gegen Zweirichtungs-Radwege. Er schreibt:

"Fahrbahnbegleitende Zweirichtungs-Radwege sind wegen des extrem hohen Unfallrisikos unbedingt abzulehnen." In Graz gibt es fast nur Zweirichtungs-Radwege, die sich überwiegend sehr gut, in einzelnen Straßen (Keplerstraße) weniger gut bewährt haben. Der VCÖ übersieht in seiner blinden Vorliebe für die Radfahrstreifen, daß dies in vielen Straßenzügen gar nicht machbar wäre. Am Beispiel der Kreuzung Glacisstraße - Elisabethstraße - Fischer-Allee wird klar, daß Radfahrstreifen

- wesentlich mehr Platz brauchen als Zweirichtungsradwege,
- im Zufahrtsbereich zur Kreuzung mehr Risiko bergen als Zweirichtungsradwege,
- bei KFZ-Spuren mit 2 Fahrtrichtungen (z.B. geradeaus + links) nicht markiert werden können
- und eine eigene Phase bei der Lichtsignalregelung brauchen würden

Damit wird klar, daß die Stadt Graz seinerzeit, als sie dank der Initiative Erich Edeggers der Förderung des Radverkehrs höchste Priorität eingeräumt hat, mit der Wahl der Zweirichtungs-Radwege eine richtige Entscheidung getroffen hat-

NAČRTOVANJE KOLESARSKIH POTI: TEORIJA IN PRAKSA

Leta 1990 je Prometni klub Avstrije (VCÖ) izdal knjigo z naslovom "Kolo v prometu", leta 1995 pa je izšla druga, močno spremenjena izdaja z naslovom "Ceste za kolesarjenje". V tej knjigi daje avtor dobre primere za zasnovo kolesarske infrastrukture, npr. pripomočkov za prečkanje ali stojal za kolesa. Eno poglavje se ukvarja s prednostmi in slabostmi kolesarskih pasov, ter eno- in dvo-smernih kolesarskih stez. Avtor je zelo naklonjen pasovom za kolesarjenje na cestah, nenaklonjen pa je dvo-smernim kolesarskim stezam. Piše: "Dvo-smerne kolesarske steze, ki spremljajo vozišče, je potrebno zaradi ekstremno visokega tveganja nesreč brezpogojno odklanjati."

V Grazu, kjer so skoraj vse kolesarske steze dvo-smerne, so se te pretežno izkazale za zelo dobre, le na nekaterih cestah (Keplerstraße) za manj dobre. VCÖ je v svoji slepi naklonjenosti kolesarskim pasovom spregledal, da ti, na nekaterih mestih kjer se hiše nahajajo na obeh straneh ceste, sploh niso možni. Na primeru križišča med Glacisstraße-Elisabethstraße - Fischer-Allee bo postalo jasno, da kolesarski pasovi:

- potrebujemo bistveno več prostora kot dvo-smerne kolesarske steze,
- skrivajo na območju dovoza več tveganja kot dvo-smerne kolesarske steze,
- ne morejo biti označeni, kjer potekajo vozni pasovi za motoriziran promet v dve smeri vožnje (npr. naravnost + levo),
- potrebujemo pri urejanju svetlobne signalizacije posebno fazo.

S tem je jasno, da je mesto Graz, ko je zahvaljujoč iniciativi Ericha Edeggerja, katerega prioriteta je bila pospeševanje kolesarskega prometa, sprejelo z izbiro dvo-smernih kolesarskih stez pravilno odločitev.

RESTRICTIONS AND PROBLEMS ENCOUNTERED BY FEMALE CYCLISTS FROM THE POINT OF VIEW OF THE CYCLISTS' LOBBY

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RESTRICTIONS AND PROBLEMS ENCOUNTERED BY FEMALE CYCLISTS FROM THE POINT OF VIEW OF THE CYCLISTS' LOBBY

Individual traffic surveys are presented to illustrate the specific behaviour of women in road traffic (more defensive style of driving, more cycling due to less access to cars, etc.). In spite of the fact that many women use bicycles, traffic planners as well as scientific theory have so far neglected the specific needs of female cyclists. A few examples, most of them referring to the situation in the City of Graz, are presented to provide a new stimulus for appropriate planning of cycling facilities.

Construction-related problems: excessively high kerbstones in the course of cycle routes (causing problems for cyclists transporting children or shopping bags), cobblestones, gullies at the edge of the road, etc.

Location and lighting of cycle tracks: narrow, enterically located routes, insufficiently lighted underpasses, etc.

Bicycle parking facilities: Good bicycle racks are especially required at shopping centres (heavily loaded bicycles).

Molestation of road users: Especially women are exposed to „macho behaviour“. The problem is aggravated where special types of facilities exist (mixed lanes for public passenger transport and cyclists).

EINSCHRÄNKUNGEN UND PROBLEME VON FRAUEN ALS RADFAHRERINNEN AUS DER SICHT DER RADFAHRERVERTRETUNG

Mit Hilfe einzelner Verkehrsuntersuchungen wird das spezielle Verhalten von Frauen im Straßenverkehr aufgezeigt (defensiveres Fahrverhalten, stärkere Radnutzung wegen fehlender PKW-Verfügbarkeit etc.). Trotz dieser intensiven Radnutzung gibt es bis heute ein Defizit in der Verkehrsplanung bzw. wissenschaftlichen Theorie, auf die speziellen Bedürfnisse von Frauen sinzugehen. Einzelne Beispiele vor allem aus der Stadt Graz selbst sollen Denkanstöße für die Planung von Radverkehrsanlagen geben:

Bauliche Probleme: zu hohe Bordsteine bei Radwegen (Kindertransport, Einkaufstaschen); Kopfsteinpflaster; Einlaufschächte am Rand der Fahrbahn

Lage und Beleuchtung von Radwegen: enge, enterisch gelegene Radwege, Unterführungen mit unzureichender Beleuchtung etc.

Abstellanlagen: insbesondere bei Einkaufszentren sind gute Radbügel zum Abstellen des Rades erforderlich (bepackte Räder)

Belästigung im Straßenraum: vor allem Frauen sind dem Macho-Verhalten verstärkt bei speziellen Anlaugeformen (Mischspuren ÖPNV und Radverkehr) ausgesetzt.

OMEJITVE IN PROBLEMI KOLESARSK, S STALIŠČA ZASTOPSTVA V KOLESARSTVU

S pomočjo posameznih raziskav prometa, smo ugotovili posebno vedenje žensk v cestnem prometu (defenzivnejše vozne lastnosti, pogostejšo uporabo koles, zaradi težje dostopnosti do avtomobilov...). Kljub intenzivni rabi koles, pa še danes obstaja primanjkljaj v načrtovanju prometa oz. znanstvenih teorijah, saj se ti še vedno ne ukvarjajo s posebnimi potrebami žensk. Posamezni primeri, posebej iz mesta Graz, naj dajo spodbudo za razmišljanje v smeri načrtovanja konstrukcij za kolesarski promet:

Gradbeni problemi: previsoki robniki pri kolesarskih stezah (prevoz otrok, nakupovalnih torb...), tlak iz prodnikov, jaški na robu vozišča

Položaj in osvetlitev kolesarskih poti: kolesarske steze v ozkih ulicah, preslabo osvetljeni podvozi...

Stojala za kolesa: zlasti pri nakupovalnih središčih so potrebna dobra stojala (naložena kolesa)

Nadlegovanje na cesti: predvsem ženske so izpostavljene mačo-obnašanju (pri mešanih voznih pasovih, kjer poteka tako kolesarski kot tudi avtomobilski promet)

EINSCHRÄNKUNGEN UND PROBLEME VON FRAUEN ALS RADFAHRERINNEN AUS DER SICHT DER RADFAHRERVERTRETUNG

Mit Hilfe einzelner Verkehrsuntersuchungen wird das spezielle Verhalten von Frauen im Straßenverkehr aufgezeigt (defensiveres Fahrverhalten, stärkere Radnutzung wegen fehlender PKW-Verfügbarkeit etc.). Trotz dieser intensiven Radnutzung gibt es bis heute ein Defizit in der Verkehrsplanung bzw. wissenschaftlichen Theorie, auf die speziellen Bedürfnisse von Frauen einzugehen. Dieser workshop - Beitrag ist nicht als abgeschlossener Forschungsbericht anzusehen, sondern als Impulsreferat. Mit Hilfe einzelner frauenspezifischer Untersuchungsergebnissen, welche im übrigen auf diese spezielle Fragestellung größtenteils gar nicht abzielten, sollen Denkanstöße für weitergehende Untersuchungen und für die Planung von Radverkehrsanlagen gegeben werden.

Wie bereits aus verschiedenen Mobilitätsuntersuchungen festgehalten wurde, weisen Frauen generell ein anderes Verkehrsverhalten auf. Das ist bedingt durch das historisch determinierte Rollenverhalten (Frau bleibt bei den Kindern und somit mehr zu Hause), bzw. ökonomische Ursachen und damit oft verbunden auch mit einer anderen Verfügbarkeit an Verkehrsmitteln. Frauen nutzen überproportional Öffentliche Verkehrsmittel, verfügen über weniger PKW und nutzen häufiger das Fahrrad (in Österreich 54% der Wege mit dem Rad, Männer 46% /10/- insbesondere in den Altersklassen über 30 Jahre. Darüber hinaus ist auch die Wegestruktur anders - mehrere aber kürzere Wege mit ausgeprägten Wegeketten.

Tabelle 1: Befragungsergebnisse einer Haushaltsbefragung im 9. Wiener Gemeindebezirk /1,4/:

Trotz eines geringeren Fahrradbesitzes ist die Nutzung der Frauen vor allem bei den Arbeits/Ausbildungswegen ident. Im Vergleich zu anderen Städten, wo die Radnutzung von Frauen über jener der Männer liegt, hat dies in Wien mit der

		Frauen	Männer
Regelmäßige Nutzung des Fahrrades: (in % aller Wege)	Arbeit/Ausbildung	6%	6%
	Einkaufswege	2,5%	2,5%
	Dienstwege	4,5%	7%
	Freizeitwege	8,5%	13%
Fahrzeugbesitz:	Fahrrad	60%	66%
	PKW	47%	58%
Wünsche an Maßnahmen in der Wohngegend: (in ganz Wien) in % aller Nennungen (Auszug)	Fahrradwege-streifen	43% (71%)	39% (60%)
	„Echte“ Radwege	40% (72%)	36% (56%)
	Wohnstraßen	38% (57%)	33% (48%)
	Beschilderung	37% (58%)	27% (45%)
	Freigabe für Skater	24% (45%)	32% (44%)
Hindernisse für die Fahrradnutzung (in % aller Nennungen - Auszug)	Distanz	6%	10%
	Unfallgefahr - allgemein	30%	25%
	Unfallgefahr - andere	33%	22%
	Mitnahme Kinder	9%	5%
	Fehlende Abstellplätze	9%	6%

fahrradfeindlichen Umfeld (geringer Fahrradanteil insgesamt von rund 4%, enge und somit gefährliche Straßenquerschnitte etc.) zu tun. Frauen wünschen sich vor allem baulich getrennte Radwege und eine bessere Beschilderung (Orientierungsmöglichkeiten). Bei den Hinderungsgründen für die Nutzung des Fahrrades fällt die Dominanz der Nennungen zur Unfallgefahr auf. Auch werden Details wie Kindermithnahme und fehlende Abstellplätze von Frauen deutlich höher bewertet. Ähnliche Ergebnisse liefert eine Befragung unter Studenten in Österreich /11/. Also auch unter sogenannten selbstbewußten Frauen wird der KFZ-Verkehr von 31% als Hinderungsgrund bezeichnet (männliche Studenten nur 23%). Das Fehlen von Radwegen stört 28% (24% bei den männlichen Kollegen). Die ersten Rückschlüsse auf die Planung beziehen sich hier auf radfahrfördernde Aktionen. Frauen verstärkt für die Radnutzung zu gewinnen, erfordert ein verstärktes Augenmerk auf die Beseitigung des Gefühls der Unfallgefahr (Testfahrten, Bau von echten Radwegen, etc.) und Angebot von Infrastrukturdetails (bessere Beschilderung, technische Beratung für Kindersitze, Abstellplätze). Auf der anderen Seite fungieren Frauen als Erzieher, sie sind somit die ersten Mobilitätsberater der künftigen Verkehrsteilnehmer. Sind Frauen bereits Radfahrer, so geben sie ein positives Beispiel. Problem dabei ist die Wertigkeit, die aus der männer-dominierten Gesellschaft vermittelt wird: geringe Wertigkeit Radbesitz - hohe Wertigkeit PKW Besitz. Es fällt auch auf, falls der Mann ein Rad hat dann ein teures/gutes, während sich Frauen mit alten/billigen 3-Gang-Rädern abmühen.

Tabelle 2: Befragungsergebnisse einer Radfahrerbefragung im 9. Wiener Gemeindebezirk /1,4/:

Diese Befragungsergebnisse decken sich mit anderen Untersuchungen,

welche bei ihren Auswertungen geschlechtsspezifische Unterscheidungen vorgenommen haben. Das Abstandsverhalten von Frauen von der rechten Fahrbahnbegrenzung ist um 10 bis 20 cm geringer als bei männlichen Radfahrern /7/. Das zeigt, daß Frauen sich mehr an den Rand der Fahrbahn drängen lassen, obwohl dies von der objektiven Unfallforschung gesehen nicht sicherer ist (riskantere Überholmanöver der KFZ-Lenker, Gefahr von öffnenden Wagentüren). Frauen

		Frauen	Männer
Beurteilung der Radfahranlagen	gut/sehr gut	39%	44%
	schlecht/ganz schlecht	61%	56%
Gründe für das Radfahren: (in % aller Nennungen - Auszug)	flexibel	19%	13%
	billig	28%	31%
	Umweltgründe	11%	13%
	schnell und gut	43%	54%
	sportlich	47%	49%
Fühlen sie sich sicher?	nein	68%	55%
Warum fühlen sie sich nicht sicher: (in % aller Nennungen - Auszug)	Zu viele Autos	36%	16%
	Fehlende Radwege	38%	26%
	Rücksichtslose		
	KFZ-Lenker	23%	19%
	Kopfsteinpflaster, Schienen	17%	11%

fühlen sich auch auf Geh- und Radwegen sicherer als Männer (sowohl Radfahrer wie Fußgänger) /8/. Offensichtlich tolerieren Frauen als Fußgänger die Benutzung des „Gehsteiges“ durch Radfahrer, weil sie die Gefahren der Fahrbahn höher einschätzen als dies die Männer tun. Lediglich in Fußgängerzonen spricht sich vor allem die Altersgruppe der über 30-jährigen Frauen gegen die Nutzung durch Radfahrer aus, weil sie eine Gefahr für die Kinder sehen.

Ein wesentlicher Punkt ist die Beurteilung von Angsträumen. Auch wenn objektiv gesehen nicht alle als unangenehm empfundenen Örtlichkeiten tatsächlich ein höheres Gefährdungspotential aufweisen (vgl. Tiefgaragen), so werden beispielsweise in den Nachtstunden Wege durch Parkanlagen etc. vor allem von Frauen gemieden. Unbestritten ist die Tatsache, daß nur rund 20% aller Gewaltdelikte gegen Frauen in Wohngebieten stattfinden /2/. Besonders gefährlich sind monostrukturierte Gewerbegebiete. Neben der offensiven Gefahr ist auch noch die Belästigung im Straßenraum zu erwähnen. Vor allem Frauen sind dem Macho-Verhalten verstärkt bei speziellen Anlageformen (Mischspuren ÖPNV und Radverkehr) ausgesetzt.

ANSÄTZE FÜR DIE PLANUNG VON FRAUENGERECHTEN RADVERKEHRSANLAGEN:

Generelle Planung - Netzplanung:

Neben den Ansätzen zu einer frauengerechten Stadtplanung (Stadt der kurzen Wege, gesunde Durchmischung, Vermeidung von „toten“ Stadtteilen in den Nachtstunden, Wohnungen auch in Erdgeschoßbereichen zur Hebung der sozialen Kontrolle, etc.) sind bereits in der Netzplanung für den Radverkehr einzelne Punkte zu beachten. Durch welche Gebiete führt eine Radroute (Parkanlage, Gewerbegebiet), gibt es Alternativrouten in den Abendstunden; möglichst kleinräumiges Radwegenetz unter Berücksichtigung der Wegeketten von Frauen (Geschäfte, Kindergarten, Arzt etc.); Hauptstraßen und Fußgängerzonen sind zum Beispiel sichere Örtlichkeiten für Radfahranlagen.

Routenplanung:

Steigungsstrecken sind gerade für Frauen ein Hinderungsgrund Fahrrad zu fahren - durchschnittlich beträgt das Gewicht eines Einkaufs zwischen 2- 5 kg, bis zu 20 kg sind möglich; bei Routen durch Grünflächen ist auf eine entsprechende Randbepflanzung zu achten (Sichtfelder freihalten - sehen und gesehen werden), wenn möglich höherliegende Wege wählen („Oberblick“); enge Geh- oder Radwege neben Eingängen, Nischen, Einfahrten sind zu vermeiden; Lage und Beleuchtung von Radwegen (enge, enterisch gelegene Radwege, Unterführungen mit unzureichender Beleuchtung etc.); Überprüfung der Querschnittsvorschläge (Richtlinien) von Radverkehrsanlagen (Fahrlinien mit Gepäck, Begleitung von Kindern et.).

Abstellanlagen: insbesondere bei Einkaufszentren sind stabile mit ausreichendem Abstand geplante Radbügel zum

Abstellen des Rades erforderlich (bepackte Räder); wo befinden sich Abstellmöglichkeiten in Wohnhausanlagen (in unüberschaubaren Kellern und Abstellräumen, muß das Fahrrad getragen werden vgl. Einkaufstaschen etc.).

Bauliche Probleme - Detailplanung:

zu hohe Bordsteine/Rampen bei Radwegen (Kindertransport, Einkaufstaschen); Kopfsteinpflaster; Einlaufschächte am Rand der Fahrbahn; Schienenstraßen (z.B. Haltestellenkaps).

Radtechnik: Fahrradsattel, Gangschaltung, Kettenkasten, Gepäcktransport, Kindertransport, Rahmenausbildung, Kurbellängen (kleinere Frauen), Lenker, Bremsgriffe.

Rechtliche Fragen:

Nimmt die StVO auf frauenspezifische Anliegen Rücksicht? (Beispiele: Befahren des Gehsteigs mit einem Kind, Fahrradanhänger).

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WOMEN AND CYCLING - CROSSING FRONTIERS: SOCIAL PERCEPTIONS, EXPECTATIONS, NEEDS

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ENGLISH WOMEN AND CYCLING - CROSSING FRONTIERS: SOCIAL PERCEPTIONS, EXPECTATIONS, NEEDS

A survey has shown a possible latent desire among British women to take up, or return to, cycling but in spite of the perceived benefits of increased fitness, convenience, economy and more social interaction, many are reluctant to cycle until more cycle-friendly measures are in place.

Currently there is a vicious circle: women perceive cycling as dangerous because of the volume and speed of motor traffic and loss of personal security, so they drive their cars instead. Restricting these hazards, while encouraging - through education and the media - a more cycle-minded attitude generally could help break this vicious circle.

Ideas are sought on how others have overcome this problem and what action we could take in Britain.

DEUTSCH FRAUEN UND RADFAHREN - ÜBERWINDUNG VON GRENZEN: VORSTELLUNGEN, ERWARTUNGEN UND BEDÜRFNISSE

Eine Studie hat gezeigt, daß unter den britischen Frauen ein latenter Wunsch vorhanden ist, mit dem Radfahren zu beginnen oder wieder auf das Fahrrad umzusteigen. Trotz der erwarteten Vorteile in puncto Fitneß, Zweckmäßigkeit, Wirtschaftlichkeit und verstärkter sozialer Interaktion zögern viele, zum Fahrrad zu greifen, bevor ein fahrradfreundlicheres Umfeld geschaffen ist.

Gegenwärtig sehen wir uns mit einem Teufelskreis konfrontiert. Die Frauen halten das Radfahren wegen des Verkehrsaufkommens und der Geschwindigkeit des motorisierten Verkehrs für gefährlich und fürchten um ihre persönliche Sicherheit, und deshalb fahren sie lieber mit dem Auto. Durch eine Verringerung der genannten Gefahren und die gleichzeitige Förderung einer fahrradfreundlicheren Einstellung - durch Bildung und Medien - sollte es jedoch im allgemeinen gelingen, diesen Teufelskreis zu durchbrechen.

Die Autorin beschäftigt sich mit der Frage, wie dieses Problem anderswo gelöst wurde und was in dieser Hinsicht in Großbritannien unternommen werden könnte.

SLOVENSKO KOLESARJENJE IN ŽENSKÉ - PRESTOP MEJA: SOCIALNA ZAZNAVANJA, PRIČAKOVANJA, POTREBE

Anketa je pokazala prikrito željo angleških žensk, da bi pričele oz. nadaljevale s kolesarjenjem, vendar kljub njihovem vedenju o izboljšanju zdravja, koristnosti, varčnosti in drugih prednostih kolesarjenja, so mnoge kolesarjenju nenaklonjene, dokler se ne izboljšajo pogoji za kolesarjenje.

Trenutno se vrtimo v začaranem krogu: ženske menijo, da je kolesarjenje zaradi količine in hitrosti prometa, ter zmanjšanja osebne varnosti nevarno, zato se raje vozijo z avtomobili. Z zmanjšanjem nevarnosti in s spodbujanjem kolesarjenju bolj naklonjenega vedenja, z izobraževanjem preko medijev, bi lahko pomagali razbiti ta začaran krog.

Iščemo predloge, kako so druge države prebrodile ta problem, ter ideje za rešitev problema v Veliki Britaniji.

WOMEN AND CYCLING - CROSSING FRONTIERS: SOCIAL PERCEPTIONS, EXPECTATIONS, NEEDS

We have problems in the UK : too many private cars on the roads ; hoaa can we encourage people to leave their cars at home and take to the roads by bicycle, particularly for short journeys.

We have an even bigger problem when trying to encourage women to cycle. Even among cycling organisations the percentage of women members falls far short of what one would expect; could it be that cycling is perceived as a predominantly male activity?

Within the CTC - the Cyclists' Touring Club, Britain's largest cycling organisation with over 44000 members - only 24s are female. In my own local district association of the CTC, Norfolk in East Anglia, women make up 29% of the membership. Within Norwich Cycling Campaign, an organisation campaigning for better facilities for cyclists in and around the city of Norwich, the proportion of women members is 38%. Perhaps women are more intrepid in campaigning than in cycling as a social or touring activity.

The National Cycle Network is a linked series of traffic-free paths and traffic calmed roads being developed right across the UK, linking town centres with the countryside. Route 1 of the National Cycle Network passes through Norfolk and is used both as a tourist route and, nearer the towns, by cyclists commuting to work. Counts taken on sections of this route, of cyclists during the spring and summer of 1997, show only 18% women (Norwich), 32% (Great Yarmouth) and 37% (Kings Lynn). Within these three towns, counts of cyclists taken at various points show an average of 20% women (Norwich), 26% (Great Yarmouth) and 28% (Kings Lynn). Yet this is a lowland area with fairly gentle contours and a temperate climate.

To try to find out women's attitudes and feelings towards cycling a questionnaire was prepared and handed out to women in various places -workplaces, schools, churches, a university, a railway carriage, women's organisations, a restaurant. Responses were received from 94 women aged from early teenage to the upper 70s.

The largest number of respondents were in the 45 to 64 age group and of these 42% said they cycled now. In the 25-44 age group, 52% said they cycled regularly or occasionally now. In the 15-24 age group, only 33% cycled now, while in the 14 or under age group 80% did. Above the age of 65 no women were still cycling. Taking the whole age range, 43% said they currently cycle, 50% used to cycle but no longer do so while, surprisingly, 7% said they had never cycled, because they had never learnt or, in the case of 2 respondents, had problems with balance. In view of the results quoted, of women counted cycling on the National Cycle Network and within towns in Norfolk, the survey results are rather surprising. There seems to be rather a large discrepancy between what women say they do and what they are seen, and counted, doing. Certainly, there is a lot of wishful thinking out there - 'I used to cycle everywhere once and enjoyed it, but now.....' and the voice trails off wistfully. So what can we in Britain do to persuade women to return to, or even take up, cycling?

In the survey questions were asked, the responses to which could give us some ideas:

Do you consider there are health benefits to cycling? Most recognised 'fresh air' and 'exercise' as beneficial. Others indicated more esoteric benefits:

'easier than walking for those suffering from arthritis', 'keeps joints supple' and 'social contact with other cyclists'. However, dis-benefits included 'dangerous in ice and fog', 'inhaling traffic fumes', 'lack of consideration by drivers', even 'possible demise'!

Why do you not ride a bike now? Among the many reasons given were 'too dangerous', 'too much traffic', 'no time', 'I have young children', 'no secure cycle storage at home', 'no secure cycle storage at university', 'I have a car, why should I cycle?' 'too old', 'too busy', 'there are more enjoyable ways to keep fit', 'a car is more comfortable and convenient'.

Are there any measures which would encourage you to return to or take up cycling? 'No!', 'more cycle lanes/safer roads/advanced stop lines/crossings/secure parking', 'slower speed limits', 'traffic-free routes'. Cycle training for adults, including maintenance classes, was mentioned, as was being able legally to cycle on footways and through pedestrian precincts. 'Keeping lorries out of country lanes' was suggested to encourage more cycling in the countryside.

Anything else? 'Seeing more people cycling' - by a 13 year old respondent. 'Having friends who like to go out cycling', 'more environmental awareness by the general population', 'seeing cyclists behaving well' - apparently cycling 'tear-aways', whose behaviour causes embarrassment to law-abiding cyclists, are a turn-off. 'Being poor' or 'having no money to buy a car' was seen as a last resort to getting a bike by two car addicts, while 'being able to afford a bike' was an alternative view given.

'vulnerable in the dark'.

With regard to school children, most respondents were in favour of 9-11 year olds being escorted to school with 12-14 year olds being allowed to cycle to school unaccompanied. 'Cycling to school encourages a lifetime habit and a healthy lifestyle'; 'the more children who cycle to school the safer they°ll be - more visible and less other traffic around the school.' They were concerned that all children should have cycling proficiency training and wear helmets, and many would prefer them not to cycle on the .footway. There was also concern that there should be Safe Routes to all Schools.

So, can we learn anything by looking at these responses? Can anything be done to promote more cycling among women? The responses did not show much of an apparent attitude problem, though there may have been reluctance to admit to one. 'I wouldn't be seen dead on a bike' was a verbal comment given several months earlier by one questionnaire respondent who subsequently gave no adverse remarks in her written replies. The comparatively large rise in the number of women car drivers, as a proportion of the overall increase, along with the decline in the number of cycle journeys over the last 20 years, probably has more to do with the perceived safety of car travel and cyclist vulnerability. It is a vicious circle: the more cars on the road, the less safe is the perception of cycling. This was seen in many responses, that women are now too frightened to cycle due to the volume of traffic and the possibility of physical attack. The latter probably has more to do with the effort made by the news media to sell stories than in any actual increase in vulnerability of women cyclists to attack. There is also the possibility that we as a nation are becoming lazier and the car is seen as the easy and more comfortable option.

The media could do much to promote cycling. Instead of the endless advertising of the virtues of the car and car travel, we could see far more to promote cycling. We could have newspaper supplements and television programmes devoted to transport in general rather than the present offerings which promote only motoring. Such programmes could include items showing the versatility and convenience of cycling in built-up areas, and the pleasures of cycling in the countryside. We could see how cycling could be integrated with public transport as well as with the car. We could be informed as to what is available to bicycle users wanting to transport children, pets and shopping, as well as for those suffering from physical disabilities.

Local authorities could encourage more cycling by prioritising the introduction of lower speed limits in built-up areas. If satisfactorily enforced, these would probably do away with the need for further cycle lanes and crossings, although advanced stop lines, allowing cyclists to wait at the front of traffic queues at junctions, will still be necessary to overcome the problem of inhaling vehicle fumes.

Safe Routes to all Schools should be implemented as soon as possible so that parents do not feel the necessity of driving their children to school, with children thus regaining their independence, social contact with their peers, and their physical and mental stamina.

Many women are deterred from cycling by their lack of mechanical knowledge and fear of breakdown while out on their bikes. Cycle rescue schemes in the UK are in their infancy, but they are there! How many potential women cyclists have heard about them? There are those who have never learnt to cycle or who did it so long ago that the thought of doing it now is daunting. For all cyclists in this situation, but especially for women, the general availability of training centres giving opportunity for practice and increasing one's confidence and road skills in a safe and sympathetic environment, plus tuition in such necessities as choosing a suitable bike, saddle and clothing, as well as in how to use one's gears and in basic cycle maintenance, would be an enormous encouragement.

So how can we encourage more women to cross the social and sexual frontiers which pervade British society to give cycling such a poor image? How can we get women back on their bikes?

WOMEN ON THE MOVE.

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WOMEN ON THE MOVE.

Self actualisation a physiological and psychological need is a myraid so difficult to attain. It takes different forms, but also as a concept, varies from individuals. Natural law obliges society to uphold eternal principles like common good though propounding feasible survivals techniques.

One precipitating factor for global peace and development is enabling women attain economic independence. Through the production process, self actualisation is possible. But in Africa, degraded spectators and selfish players constitute the majority in the process.

The new millennium should be faced with information zeal on how best to enable women actualise their productive capacities. Provision of appropriate technology like bicycle to rural women is one way of attaining this.

ENGLISH

FRAUEN IN BEWEGUNG

Radfahrende Krankenschwestern, die AIDS-Patienten täglich besuchen können...

Hebammen, medizinisches Personal der Gemeinde, Physiotherapeuten mit einem Fahrrad, die Notfälle weitab der Hauptstraßen erreichen können ... Radfahrende Frauen, die nicht mehr schwere Lasten auf dem Kopf tragen müssen, die nicht mehr über 2 Stunden Fußmarsch auf sich nehmen müssen, um Wasser zu holen oder auf den Markt oder zum Shamba zu gehen ... Frauen, die mehr Zeit für ihre Kinder haben und das Fahrrad nutzen können, um ein Einkommen zu erwirtschaften ...

Dies sind die ersten Früchte unserer Arbeit!

1992 haben wir, eine kleine NGO mit Sitz in Deutschland, begonnen, Geld für den Kauf von Fahrrädern für Uganda zu sammeln. Wie Sie vielleicht wissen, spielen Fahrräder in Uganda für den Gütertransport und die Personenbeförderung die wichtigste Rolle, sind jedoch in der Anschaffung sehr teuer.

Deshalb haben wir über die Idee nachgedacht, Frauen die Möglichkeit zu bieten, ein Fahrrad zu einem reduzierten Preis zu kaufen und es dann sowohl zugunsten der Gemeinschaft als auch für private Zwecke zu verwenden.

FAHRRAD-SPONSORING

Sie spenden den Betrag für den Kauf eines Fahrrads (oder einen Teilbetrag). Das Fahrrad wird in Uganda zum Großhandelspreis angekauft und in der von uns 1991 errichteten Werkstatt oder in der Nähe der Empfänger zusammengebaut.

Wir stehen in engem Kontakt mit NGO-Projekten in Uganda. Diese sind den meisten Fällen im Bereich der Gemeinschaftsentwicklung oder der medizinischen Grundversorgung tätig.

DIE NACHFRAGE

Mittlerweile haben Sponsoren etwa 3000 Fahrräder finanziert, etwa 2000 davon ausschließlich für Frauen. Die Nachfrage ist jedoch wesentlich höher, und wir hoffen, daß wir auch in der Zukunft Sponsoren finden werden.

DIREKTER KONTAKT:

Die Sponsoren sollten wissen, wo das von ihnen finanzierte Fahrrad betrieben wird und wer es verwendet. Deshalb besteht die Möglichkeit, über einen Brief vom Empfänger des Fahrrads direkten Kontakt herzustellen.

DEUTSCH

SLOVENSKO

ŽENSKE NA POHODU

Medicinske sestre kolesarijo in tako lahko redno obiskujejo paciente, ki so okuženi z AIDS-om... Babice, javni zdravstveni delavci, fizioterapevti lahko s kolesom pridejo do nujnih primerov daleč stran od glavnih cest...

Ženske, ki kolesarijo, so osvobodjene težkih tovorov, ki so jih nosile na glavah; ni jim več potrebno pešati več kot dve uri, da bi prinesle vodo ali iti peš v trgovino oziroma na tržnico...

Ženske lahko tako preživijo več časa s svojimi otroki in s kolesarjenjem povečujejo svoj dohodek...

Le-to so prvi uspehi našega dela!

Leta 1992 je naša majhna NGO (nevladna) organizacija, s sedežem v Nemčiji, pričela zbirati denar za kolesarsko pokroviteljstvo v Ugandi. Kot verjetno že veste igra kolo v Ugandi glavno vlogo pri prevozu blaga in ljudi, čeprav je zelo drago. Tako smo prišli na idejo, da bi pomagali ženskam kupiti kolo po nižji ceni, ne glede na to, če ga uporabljajo v službene ali privatne namene.

KOLESARSKO POKROVITELJSTVO:

Denar, ki ga podarjate je za kolo ali za del kolesa. Kolo bo kupljeno v Ugandi po polni tržni ceni in bo nameščeno v delavnici, ki smo jo postavili leta 1991 ali blizu ljudi, ki ga bodo prejeli.

Smo v tesnem stiku s projekti organizacije NGO v Ugandi. V večini primerov se ubadajo z razvojem skupnosti ali z osnovno zdravstveno nego.

POVPRAŠEVANJE:

Medtem so sponzorji financirali okoli 3000 koles, od tega jih je 2000 namenjenih izključno ženskam. Povpraševanje je vedno večje, zato upamo, da bomo tudi v prihodnosti uspeli poiskati sponzorje.

DIREKтна ZVEZA:

Sponzorji naj bi vedeli, kje se financirano kolo nahaja in kdo ga uporablja. Tako so lahko na direktni zvezi preko pisem s tistim, ki je kolo prejel.

WOMEN ON THE MOVE

INTRODUCTION:

This paper attempts to advocate for poverty eradication through accessing women to basic factors of production one of which is the bicycle.

The emphasis is on poverty eradication in a developing country like Uganda. It is so because we are all aware of the unquantifiable effects of it's spread on socio-economic life. It's also poverty eradication because lack of means to sustain meaningful life amounts to negation of the individual.

The issue is to access the least advantaged because Africa's perverted economic culture has bred rich Governments that purchase expensive Aircraft Fighters as opposed to impoverished masses that cannot afford even 500 grams of sugar or posho daily. The politically affluent have had opportunity to use their position to influence flow of wealth their way while little or nothing meaningful is left to the burdened gagged tax payer.

Women stand out for defence here because facts on the ground show that lack of economic independence has left them worse pauper than men, culture albeit silently dictates that they be relegated to the second class citizens and yet their potential to achieve, if obstacles are removed, compares well and in some cases better than men.

It should be noted that the issue is not to create a women tyrant but rather to come to terms with the fact that in our emerging 21st Century, a group of human beings called women could live on as if they are natural slaves to prosperity and if the situation is not checked.

A wide range of initiatives have been implemented by Government and NGO's to combat poverty amongst women. Within her established mandate, expertise and comparative advantage in the political economic area, Uganda Government has established a Ministry of Gender, put in force Parliamentary Women Representatives and legalised

women representation on all Local Councils to constitute 1/3

Following this initiative, UBSPW (Uganda Bicycle Sponsorship Project & Workshop) intends to increase on women bicycle beneficiaries.

PRELIMINARY CONSIDERATIONS:

A research carried out by Jürgen Heyen-Perschon in 1997 shows that the bicycle improves an individual's productive capacity by 20 %.

It also brings out the fact that the time spent and work load is reduced 3 to 4 times over.

This is critical in an economic environment where Agriculture is the highest contributor to GNP and yet mechanised practices are absent.

A true Ugandan village picture will show that more women than men till the land and have to carry harvests on their heads from gardens to the market or just have to carry their daily drinking-water from wells to homesteads.

Arising from the above it follows that:

- A bicycle is a prime factor of production in Uganda.
- Providing bicycles to women is an important method of investing in the human resource by which measurable returns will accrue.
- By increasing women work efficiency, real domestic income will go up, pushing GDP higher.
- This is an accurate method of realising national wealth.

THE UGANDAN SITUATION:

The greater number of Ugandan women are aware of the advantages a bicycle would give a typical rural homestead.

A few need knowledge about them. For these enabling factors need to be in place. Thus the immediate intervention should consist in providing logistics like bicycles and give information about usefulness.

For the category which understands bicycle use and are ready to use them, there is need to promote the skill and support, too. Intervention should consist in provision of information about correct use by emphasising benefits.

Provision of bicycles and constant refresher courses to enable them sustain use.

WHY BICYCLES FOR UGANDAN WOMEN THEN ?

Three reasons explain this:

1. **EMANCIPATION** : Through bicycle use, women stop being spectators in the production arena. They too become bread winners and partners in the production process. As a consequence their realised incomes lead to increased self esteemed and better domestic welfare.
2. **EMPOWERMENT** : Economic interdependence between women and men as a result of income accruing from bicycle economic use means that women begin to take part in decisions that effect them.
3. **MICRO-FINANCING** : Now, United Nations approach to poverty alleviation focuses micro-financing. It is an action which seeks to increase both national domestic income.

The parameters for use here are quite open depending on any particular economic environment for Uganda's case , investing in the poorest of the poor through giving them bicycles for economic use is one way.

In Uganda, women can barely afford a cheap shoe to protect them on the road. How far removed from them then is a bicycle. A bicycle if properly used by a woman would present in sum total the appropriate technology solution for a less developed country's survival.

MARKETING OF BICYCLE TOURISMUS - „MODEL COUNTRY AUSTRIA“

Dr. Martin Uitz

Geschäftsführer der Salzburger Land Tourismus Ges.m.b.H.

ENGLISH

MARKETING OF BICYCLE TOURISM - "MODEL COUNTRY AUSTRIA"

Who would have believed 10 years ago that cycle tourism would become an important economic factor in Austria? Who among the tourists from Germany, Switzerland or Italy and who among the Austrian citizens themselves would have expected that one of the most popular long-distance cycle routes would be established in Austria, a mountainous country in Central Europe?

The successful development began with the construction of power stations at the river Danube. Along the river, footpaths were established which were later converted into cycle paths. In the 80s, cycle tourism on the meanwhile legendary Danube Cycle Path boomed, surprising many of the actors involved.

Soon tourism experts in all parts of Austria began to imitate the successful Danube Cycle Path, and well-marked cycle routes were established at virtually all large rivers and lakes.

Initially, however, there was a lack of compact information on the various possibilities. Cycle tourists like to prepare well for their tours. They need maps, information on boarding and accommodation, bicycle rental facilities, transport to the starting point and sightseeing.

DEUTSCH

MARKETING OF BICYCLE TOURISMUS - „MODEL COUNTRY AUSTRIA“

Wer hätte vor 10 Jahren gedacht, daß Fahrradtourismus in Österreich jemals ein wichtiger Wirtschaftsfaktor werden könnte. Welcher Tourist aus Deutschland, der Schweiz oder Italien aber auch welcher Österreicher hätte vermutet, daß in diesem mitteleuropäischen Gebirgsland einige der populärsten Radwanderrouen Europas entstehen würden?

Am Beginn des Erfolges stand der Kraftwerksbau an der Donau. Durch das Anlegen von flußbegleitenden Treppelwegen und deren Umfunktionierung zu Radwegen entwickelte sich in den achtziger Jahren ein für viele Beteiligte überraschender Boom von Fahrradtouristen am mittlerweile legendären Donauradweg.

Bald begannen Tourismuswerber in ganz Österreich, das Erfolgsmodell Donauradweg zu kopieren. An praktisch allen großen Flüssen und Seen entstanden gut markierte Radrouten.

Was anfangs fehlte, war eine kompakte Information über das Angebot. Fahrradtouristen bereiten sich auf ihre Reisen intensiv vor: Sie benötigen Landkarten, Informationen über Unterkünfte, Radverleih bzw. Anreiseempfehlungen sowie Sightseeing.

Im Jahr 1992 ergriff die Salzburger Land Tourismus Gesellschaft die Initiative und koordiniert seither eine Werbegemeinschaft aller österreichischen Landestourismusorganisationen und der Österreich Werbung mit dem Ziel, konzentriert für Radtourismus an Österreichs Radrouten zu werben, kompakte Informationsmaterialien zu produzieren und geeignete Unterkünfte zu empfehlen.

Und siehe da: Der 1993 erstmals erschienene gemeinsame Prospekt „Radtouren in Österreich“ entwickelte sich zu einem der meist nachgefragten Werbemittel des österreichischen Tourismusmarketing.

Eine Studie aus dem Jahr 1996 belegt, daß Fahrradtouristen ein wesentlich größeres Informationsbedürfnis an den Tag legen als herkömmliche Aufenthaltstouristen. Auch scheinen sie wesentlich offener für Werbemaßnahmen zu sein, da sie regelmäßig auf der Suche nach neuen Zielen für ihr Hobby sind.

Wichtige Ergebnisse dieser Studie sowie die aktuelle Situation des Fahrradtourismus-Marketings für Österreich sind Inhalte des Referates.

WEDNESDAY

TRŽENJE KOLESARKEGA PROMETA – "VZORČNA DRŽAVA AVSTRIJA"

Kdo bi pred 10 leti mislil, da bi kolesarski turizem v Avstriji lahko postal pomemben gospodarski faktor. Kateri nemški, švicarski ali italijanski turist, pa tudi kateri Avstrijec je lahko domneval, da bodo v tej srednjeevropski gorski deželi nastale nekatere najbolj priljubljene kolesarske poti v Evropi?

Na začetku uspeha stoji gradnja elektrarne na Donavi. Z nastankom poti ob reki in njihovem prestrukturiranju v kolesarske poti, je v 80-ih letih prišlo do, za mnoge udeležene, presenetljivega razmaha števila kolesarskih turistov na sedaj že legendarni Donavski kolesarski poti.

Kmalu so turistični ponudniki po celotni Avstriji pričeli kopirati Donavsko kolesarsko pot kot uspešen model. Ob domala vseh velikih rekah in jezerih so nastale dobro označene kolesarske poti.

Na začetku je manjkala strnjena informacija o ponudbi. Kolesarski turisti se na svoja potovanja intenzivno pripravljajo: uporabljajo zemljevide, informacije o prenočiščih, izposoji koles...oz. priporočila o možnostih prihoda, kot tudi ogleda znamenitosti.

SLOVENSKO

LONG DISTANCE CYCLE ROUTES: EVALUATING THE TOURISM POTENTIAL**Les Lumsdon**

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Les Lumsdon is a senior lecturer at the Business School, and a researcher in the Centre for Alternative and Sustainable Transport, Staffordshire University. Les is currently working on an evaluation of the market for cycle tourism.

LONG DISTANCE CYCLE ROUTES: EVALUATING THE TOURISM POTENTIAL

The paper examines the tourism potential and the likely impacts of long distance cycle routes. Most studies have previously examined the direct spending of cycle tourists, and whilst these have been useful in establishing the relative importance of cycle tourism they have a number of limitations. The author suggests that it is necessary to investigate all impacts of long distance cycle routes, as is appropriate with any major sustainable tourism attraction; he recommends a comprehensive research programme.

ENGLISH

RADWANDERWEGE: EVALUIERUNG DES FREMDENVERKEHRSPOTENTIALS

Dieses Referat analysiert das Fremdenverkehrspotential und die zu erwartenden Auswirkungen von Radwanderwegen. Die meisten bisher durchgeführten Studien haben sich mit den direkten Ausgaben der Fahrradtouristen beschäftigt. Sie waren nützlich, um die relative Bedeutung des Fahrradtourismus nachzuweisen, unterliegen jedoch einer Anzahl von Beschränkungen. Der Autor ist der Ansicht, daß sämtliche Auswirkungen von Radwanderwegen untersucht werden müssen, wie dies auch mit jeder anderen größeren nachhaltigen Fremdenverkehrsattraktion geschehen sollte. Er empfiehlt ein umfassendes Forschungsprogramm.

DEUTSCH

DOLGODISTANČNE KOLESARSKE POTI : VREDNOTENJE TURISTIČNEGA POTENCIALA

Prispevek raziskuje turistični potencial in možne vplive dolgodistančnih kolesarskih poti. Mnoge predhodne študije so raziskale neposredno zapravljanje turistov kolesarjev; glede na uporabnost le-tega pri ustanavljanju relativne pomembnosti kolesarskega turizma pa imajo vrsto omejitev. Avtor predlaga, da je nujno raziskati vse vplive dolgodistančnih kolesarskih poti, kot se to spodobi za vse glavne prenešene turistične zanimivosti. Avtor predlaga obširen in izčrpen raziskovalni program.

SLOVENSKO

LONG DISTANCE CYCLE ROUTES: EVALUATING THE TOURISM POTENTIAL

With the growth in supply of long distance cycle routes, especially the pan-European routes known as EuroVelo, it is important that advocates and practitioners evaluate the potential impact of such routes on the communities through which they pass. The reasoning is clear. If municipalities and regional or national governments are to invest in infrastructure for cyclists what type of benefits and dis-benefits might be expected? The tourism potential relates not only to the appeal of cycle tourism to visitors as an attractive pursuit while on holiday but to the supplier it is about the level of economic impact that such a route can bring to a locality. This paper provides an initial exploration of the subject.

There is not a strict definition of a long-distance route. It refers to a route which has been designed to attract or satisfy mainly recreational users but can also accommodate utilitarian cycling. The level of demand will depend on location, design, touristic appeal, and access needs or desires of the catchment population. There is no precise definition as to the length of such a route, although routes or trails tend to be at least 50 kilometres long, and hence offer the potential for visitor spending in a locality. The North Sea Cycle Route, for example, is 5500 km. While most are linear, some routes are designed as circuits or figure of eight loops. The key determinant is that they are sufficiently long to attract overnight staying visitors. Routes or trails are often promoted to users in a particular way perhaps as a challenge route, a theme or pilgrimage trail, or as in the case of EuroVelo, a network of such routes which allows discovery of Europe by bicycle.

The term economic impact is often used to describe economic spending in local communities, attributable to cycle route development (Delpy and Li, 1998). This is the most commonly adopted approach. It focuses on the purchase of goods and services by cyclists in local economies through which a trail or cycle route passes. Rarely are other items of expenditure taken into account, such as goods purchased in preparation for a cycle tour, for example, or in travel costs to a destination.

Thus, most studies which refer to long distance routes have estimated the direct effects of visitor expenditure only, and the results are presented as a total value of spending by visitors, for example, in shops, cafes and accommodation. These studies provide useful information about the scale and scope of the level of spending attributable to cycle tourists. Consequently, such data has been well used by advocates and tourism practitioners when seeking resources to develop cycle tourism.

A good example is Münsterland in Germany where an estimated 1 million overnight stays generate an average spend per cycle tourist of between 400 and 600 DM (763 to 1143 ecu) per 4 to 5 day stay. The spend per day per visitor is calculated to be 30 DM (15.7 ecu). The estimated range of day cyclists is thought to be between 8.3 million and 15 million day visitors per annum (Datzer, 1998) giving a range of spend from 249 to 450 million DM (130.6 to 236 million ecu) per year. These figures have been determined through marketing research exercises or continuous monitoring of accommodation providers. In the area, the themed long distance "One Hundred Castles" route, has been very successful in attracting visitors. As a result there are about 5,000 cycles for hire in the area and 300 package offerings aimed at international visitors. The total estimated overall annual expenditure from overnight staying visitors is 300 million DM (157 million ecu). This is a high level of tourism demand in an area not known for attracting main holidays, and thus the strategy has been to attract short breaks and this has had a significant effect on the local tourism economy.

Such studies are important in that they establish that cycle tourism and in some instances, long distance routes, can generate considerable local economic impact. However, they do have a number of limitations. One assumption often made in calculating these figures is that the cycle tourist is newly generated and would not have otherwise visited the area or route. This is not determined by marketing research, it is simply made as an accepted assumption. The visitor, however, might have been attracted in the first instance by the image of the destination, then secondly consider whether it is possible to go cycling or if not, walking or sightseeing. If this is the case, the visitor would be attracted to the region or destination anyway. In this case, cycle tourism would simply be abstraction of revenue from another pursuit. The level of spending therefore would not be a net gain as such, unless it was a repeat visit that would not have otherwise been made.

The second assumption that is often made by this type of study is that the visitor spend will be retained in the local community. It is sometimes stated that cycle tourists are more likely than car borne visitors to spend in locally owned accommodation, and buy locally made provisions. It appears to be a reasonable assumption, but as yet it is not

proven. The opposite could be possible. Many rural areas in Europe have lost their local shops, breweries, bakers and other suppliers. As a rule, supply chains have lengthened. Thus, it is possible that national or multi-national organisations will reap most benefits from spending in local facilities as the revenue is "leaked" out of the local economy.

The third assumption is that cycle tourists bring minimal environmental impact, and therefore this aspect tends to be investigated less. It is nevertheless a major question, which will require more detailed consideration than hitherto. For example, will long distance cycle routes encourage more car-borne trips into rural destinations? The answer often depends on design of the route, and the level of parallel public transport provision, but a municipality might also consider it necessary to invest in more car parking.

A few studies have adopted a more comprehensive approach, known as the Multiplier model, which measures inputs and outputs of impacts in a local economy. It takes into account not only direct expenditure by cyclists but also calculates indirect and induced effects of direct visitor spending (Fletcher and Snee, 1989).

As a consequence of cyclists buying goods and services along the route, the tourism businesses generate subsequent expenditures from suppliers. For example, a café might purchase twice as many supplies of food and drinks from wholesalers to meet the needs of the visitor during the summer months. This increases the turnover of the supplier and leads to a possible increase in employment. Thirdly, there are induced effects which are the effects which occur as a result of local people being employed or receiving profits from cycle tourism within the local community. For example, employees might have more disposable income to spend in local businesses, buying goods and services locally, and thus stimulating the local economy and employment.

As mentioned previously, one of the major criticisms of this type of economic model is that it is not able to accurately reflect the level of leakages from a local economy (Briassoulis, 1991). For example, cycle tourists might generate the need for more food and beverages, but these might also have to be sourced from outside the local economy. This could especially be the case in rural areas where shops and suppliers have become increasingly dependent on major national and international supply chains.

A detailed recent multiplier study has been undertaken for the Velo verte in Québec. La Route verte is a 3,400 km network, being developed in Québec, and with proposed links to New England in the USA (Pronovost, et al, 1998). In 1996 the Urbanisation National Research Institute undertook a preliminary study of the potential tourism impacts of La Route verte. The findings were then subject to further analysis by Archambault et al (1997), primarily using an input-output multiplier model to estimate direct and indirect effects in the Québec economy. The level of spending per staying visitor has been calculated at two levels, a lower estimate per head per trip of \$40 and a higher estimate of \$60 per trip. This gives a range of expenditure as follows:

Table 1 Expected Expenditure: La Route verte

Source: Adapted from Archambault et al (1997) Figures are expressed in Canadian dollars

	New Tourists	Domestic Tourists	Day Trippers	Locals
Number of trips	16,700	26,400	135,615	2,555,660
Spending per trip	\$40-\$60	\$40-\$60	\$22.50-\$25	\$7-8
Total Spending at \$40 per trip (Low)	\$2,205,000	\$2,749,000	\$3,051,000	\$17,889,000
Total Spending at \$60 per trip (High)	\$3,308,000	\$4,124,000	\$3,390,000	\$20,445,000

Thus, it is

estimated that La Route verte will generate total expenditure within the range of \$25,894,000 and \$31,267,000 (Canadian \$) of which approximately 10 per cent would be new visitors attracted by the facility. Retention of existing domestic tourism will generate a further 13 per cent. Nearly one quarter of the additional cyclists' spending in the Québec economy can be attributed to the overall appeal of La Route verte as a tourism attraction, rather than being simply a transport network (Couture, et al, 1998). Furthermore, the study provides a potential breakdown of spending, thus indicating which type of businesses will benefit:

Table 2 Categorisation of Spending : La Route verte

Source: Vélo Québec (1998)

Some writers, however, would expect the term economic impact to mean a cost-benefit analysis where all of the known economic,

social and environmental costs-benefits are appraised and quantified. Some form of cost-benefit analysis is common

Area of spend %	Tourists(visitors)	Day trippers	Locals
Food & Lodging	57	47	66
Transportation	18	28	0
Entertainment/Services	13	8	11
Other Products/Services	12	17	23
Total	100	100	100

within feasibility studies at resorts, for example, or certainly at new major tourism developments. It is not, as yet applied extensively in the development of long distance cycle routes.

It is likely to become more important, because long distance cycle routes, like other forms of tourism development, rely so heavily on what economists define as public goods, which are not traded in a commercial way (Bull,1991). For example, how can natural scenic beauty, village green and local community friendliness be the subject of pricing and tourism development ? That is why value in use and value in conservation are critical issues. The core of sustainable tourism development relies on the principle of conserving the very aspects of landscape, wildlife and local social structure which give distinctive appeal to the visitor so that there is not a serious deterioration of the tourism asset (Gray, 1982) A second, but related issue is that benefits or costs which are attributable to the development of a long distance cycle route might well be bestowed on one group of people or communities but at the same time costs will borne by another group. These are referred to as externalities if they can be quantified. Thus, a route might not only bring economic benefits to the local hotel and shop but a higher nuisance factor in terms of illicit parking to nearby residents.

The types of costs and benefits that might be included in a study of a long distance cycle route are set out below. However, it will also be necessary to ascertain who benefits from and who bear costs when a route is developed. The list might include:

Costs

Construction of cycle routes
Marketing of routes
Maintenance and monitoring
Potential social costs
Potential environmental costs

Benefits

Increased visitor expenditure
Employment prospects
Business confidence
Retention of community facilities
Improved recreational amenities
Potential environmental benefits

This provides an indicative outline rather than an exhaustive list of externalities which might be included. Some practitioners might

reject a more comprehensive approach on the grounds of resource required, or because of the limitation or appropriateness of the research tools developed to date. On the other hand, the case for a more extensive research exercise is increasing, even at a local level where LA 21 is being adopted (Lumsdon, L.M. and Tolley, R.S.,1998). Given that long distance cycle routes are already shown to be major generators of visitors, for example, the Donauradweg, or LF routes in the Netherlands, environmental and social impacts of cycle tourism need to be explored in greater depth as would any other major generator of visitor numbers.

There is a strong argument for addressing these issues within a monitoring programme for EuroVelo. In terms of a research agenda, this would involve a form of cost benefit analysis which takes into account the issues of abstraction, measures of environmental impact of all forms of transport used while on holiday, displacement or reduction of car trips, local economic impacts and social change. This might take the form of a number of case studies across the network, which seek to evaluate the extent to which increased use of cycle routes in rural areas impact on local host communities.

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COORDINATION OF GERMAN LONG DISTANCE CYCLE ROUTES

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Frank Hofmann (30) is member of the federal board of the ADFC since 1994, competent especially for Cycling Tourism. Author of books and several articles about cycletourism in Germany. Since 1998 he is leading the project "coordination of German long distance cycle routes and production of national marketing for cycle tourism".

COORDINATION OF GERMAN LONG DISTANCE CYCLE ROUTES

and Production of national Marketing for cycle Tourism

Bicycling as leisure and holiday pastime has gained enormous importance during the last years in Europe and especially in Germany. The infrastructure in Germany concerning cycle tourism contains 37.000 km long distance cycle routes. But the quality of the routes, the signposting and additional infrastructure is often not satisfying. In order to react to this organisational problems and to promote this sustainable form of tourism the ADFC (German Cycle Club with 100.000 members) stimulate a project in cooperation with the German Tourism Association (DFV) with support of the federal ministry of economics in 1998. The presentation summarizes experiences and first results

**KOORDINIERUNG DES DEUTSCHEN RADFERNWEGENETZES UND ERSTELLUNG VON
VERMARKTUNGSHILFEN FÜR FAHRRADTOURISMUS IN DEUTSCHLAND**

Radfahren als Freizeit und Urlaubsaktivität hat in den vergangenen Jahren in Europa und besonders in Deutschland stark an Bedeutung gewonnen. Deutschland verfügt über 37.000 Kilometer Radfernwege. Allerdings ist die Qualität der Routen, ihre Beschilderung und ergänzende Infrastruktur höchst unterschiedlich und oft unbefriedigend. Tourismus ist in Deutschland Sache der Länder, eine Koordination und Abstimmung findet daher nur bedingt statt. Der ADFC hat daher 1996 in Kooperation mit dem Deutschen Fremdenverkehrsverband (DFV) ein Projekt mit Förderung des Bundeswirtschaftsministeriums angeregt, das seit 1998 an diesen Problemen arbeitet. Der Vortrag diskutiert differenzierte Erfahrungen und erste Erfolge des nationalen Projektes.

KOORDINACIJA NEMŠKIH DOLGODISTANČNIH KOLESARSKIH POTI IN IZDELAVA NACIONALNEGA MARKETINGA ZA KOLESARSKI TURIZEM

Kolesarjenje je, kot pristočno in pošteno razvedrilo, v zadnjih nekaj letih v Evropi in še posebno v Nemčiji pridobilo ogromen pomen. Kolesarska turistična infrastruktura v Nemčiji vsebuje 37.000 km dolgo kolesarsko pot. Sama kvaliteta poti, kačipoti in dodatna infrastruktura pa pogosto ni zadovoljiva. Kot reakcija na te organizacijske probleme in pospešitev te prenešene oblike turizma, je ADFC (Nemška kolesarska zveza s 100.000 člani) leta 1998 stimulirala projekt, v sodelovanju z Nemško turistično organizacijo (DFV) in s podporo Zveznega ekonomskega ministerstva. Predstavitev je tako povzetek naših izkušenj in prvih rezultatov.

COORDINATION OF GERMAN LONG-DISTANCE CYCLE ROUTES AND PRODUCTION OF NATIONAL MARKETING FOR CYCLE TOURISM

Bicycling as leisure and holiday pastime has gained enormous importance during the last years in Europe and especially in Germany. The infrastructure in Germany concerning cycle tourism actually contains 38.000 km of long-distance routes! But the quality of these routes, the signposting and additional infrastructure are often not satisfying. Tourism as a political task in Germany is (by law) not in national responsibility, but is organized by the "Bundesländer". So there is no "national profile" existing by now. In order to react to this organisational problems and to promote this substantial form of tourism ADFC (German cycle club; 100.000 members) stimulate a project in cooperation with the German Tourism Association (DTV) with support from the federal ministry of economics.

1. AIMS OF THE PROJECT

- Creating a real net of national cycle routes as a touristic product which fits and advances the European project "Eurovelo"
- Discussion of (and maybe set) minimum quality concerning route infrastructure, especially sign-posting.
- Creating a network between the "Länder" to reach a better information level.
- Reduction of information deficits concerning cycle tourism promotion strategies.
- Analyzing the actual offer of routes, additional infrastructure and packages.
- Creating a promotion campaign "Discover German by bike".

2. TASKS OF THE PROJECT

Two questions are relevant to rise up the quality of cycle tourism in Germany:

- a) The coordination of several qualified long-distance routes.
- b) Production of national marketing and promotion for cycle tourism.

a) The economic significance of cycle tourism has been noticed by a few actors of tourism. So the ADFC notices a lot of new routes from different regions every year without any networking. And there is still a lack of knowledge concerning the necessity of infrastructure quality and the special needs of cyclists:

- Creating a network of routes and discussion about planning further (?) products.
- Discussion about minimum standards concerning the infrastructure (signposting, route surface, service etc.)
- Furtherance of research work

b) The actual offer about cycle tourism is not transparent for possible "customers".

The knowledge about how to organize a cycle holiday is not very common. A lot of good services are not well known, because cycle tourism is not so old we have no concentrated marketing.

- Production of a catalogue as substantial information source for the customers
- Production of efficient marketing elements for the international touristic campaign for Germany in cooperation with the German National Tourism Board (DZT/DTM)
- Furtherance of distribution and market transparency concerning cycle tourism

3. SUMMARY OF THE CONTENTS OF THE PROJECT

a) National Information "broking"

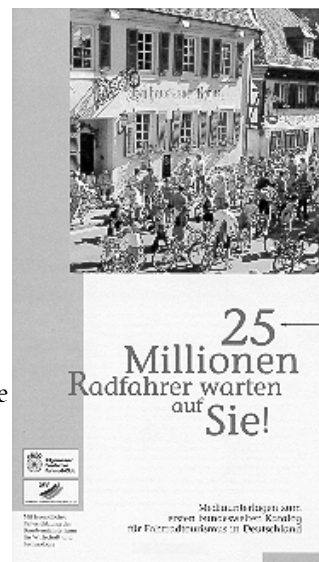
- Long-distance cycle routes
- packages
- cyclefriendly accomodation
- Events and action around Cycling in Germany (fairs, events sport)
- Maps and guides
- further relevant addresses, offers and services.

b) National converences

- Infomation about good practise in cycle tourism and examples for national route management in europe.
- Quality discussion about minimum standards.
- Who is able to coordinate and rule a national route system?

c) Production of a national catalogue

d) Ideas of new marketing and financial concentration



mediapaper for the catalogue

4. PROJECT TIMETABLE

Total running time: 1.2.98 - 31.5.99, within project manager from 1.6.98 - 31.5.99

- 2/98: Preparation for the poject through DTV, ADFC. Analyzing sitution concerning long-distance cycle routes.
- 3/98: Presentation during the ITB in Berlin. Promotion of the project aims and first edition of the map "Radfernwege in Deutschland" and an "Eventliste".
- 6/98: Beginning of the projectmanager. Contact to all possible partners. Constitution of the "Beirat", with 16 assistent persons from tourism.
- 6-12/98: Analysis of the offer of routes, additional infrastructure and packages concerning cycle tourism in Germany1998/99
- 9/98: 1. national coordination conference with 100 concerned persons form DTV, ADFC, ministry of economics, ministries of the Länder, German tourist office etc.
- 10-12/98: Advertizing for financial support to the catalogue
- 3/99: Publishing the catalogue „Deutschland per Rad entdecken" (Discover Germany by bike)
- 3/99: Presentation during the ITB in Berlin und making public relations.
- 3/99: 2. national coordination conference.
- 4/99: Summary of the conferences especially concerning the task of coordination.
- 5/99: project end and report.

5. FACTS AND DATA BACKROUND

Cycle tourism is allready a special-interest market in tourism. But it is of growing importance an still underestimated. There are a lot of positive arguments for further support:

Cycling is trendy

- The use of bicycles as means of transport is rising up through the last years.
- 2% of all Germans use bicycle as main transport for their holidays (or the longest distance). As comparison: Only 1% uses motorhomes oder ships / cruise lines.
- Investigation have shown, that 24 % of all tourist "use" bicycle on holidays (Of course this data are not very concrete).
- 8% of all Germans have personal experiences with cycle tourism: They were on a bicycle trip with more than 5 alternately overnight stays.

Cycling is easy!

- Cycling needs no special knowledge (compare surfing, diving etc.).
- The bicycle is known to nearly everybody in our society.
- 4,5 million bicycles are sold in Germany 1998.
- The existance of bicycles in Germany is about 78 million.

Infrastructure: Germany offers good start for a national cycle-route system

There are abeout 180 long distance routes in Germany totalling 38.000 km. A few "Bundesländer" have a lot of good concepts for a network.

Sustainable: (Not only) The German Tourism needs practical and attractive alternatives to car tourism. Variety of landscape and multifarious culture could be explored much better by bike than by car. Even if the environment discussion is not any longer very loud (because everybody looks at the problems of Unemployment) solutions are needed.

...and as "quality-tourism" economic successful

- For a few destinations in Germany cycle tourism is of substantial economic impact. Investigations have shown that cycle tourists have 20 % higher daily expenditure than "ordinary" tourists.
- Infrastructure for cycle tourism is relatively cheap and of great local acceptness. Cyclists are of great relevance even for underdeveloped regions because of their "lower range".
- Cycle tourism is (not longer) "poor-people-tourism". Most of the 150.000 cyclists on the Donauradweg (danube cycle path) chooses **** Hotels each season.

cycle tourism means future

- Cycle tourism link "positive" aspects (activity, wellness, nature und leisure) to "useful aspects" (sustainability, high economic impact).
- Three million Germans will go on bicycle vacation 1999!
- Cycle tourism ist "tourism at home": more than 50 % of cycle tourists go on tour in Germany. Only 34% of the average do so. From this point of a view cycle tourism is a positive argument concerning what we call "Standortdebatte" (Economic position debate facing globalization).

5. FIRST RESULTS AND EXPERIENCES OF THE PROJECTMANAGEMENT



Map: Radfernwege in Deutschland

- The map "Radfernwege in Deutschland" was the first time showing all long-distance cycle routes. 10.000 pieces are given to interested cyclists through 1 month! A lot of tourist officials are not amused about the map, but a quality discussion began.
- The catalogue "Deutschland per Rad erleben" is not ready yet - but the interest of to it is very high. It was no problem to get the money for 250.000 pieces - which is a low number in comparism to products in switzerland or autriche.
- The discussion about quality minimum standards are very busy. The need for quality (standards) is accepted, the details are disputed.
- The discussion about the coordination and networking is busy as well. But there is no simple outcome or concept yet to see..

Lots of work for the ADFC!

AIR POLLUTION TRENDS WITH REGARD TO THE TRAFFIC POLICY IN MARIBOR

dr. Vesna SMAKA - KINCL, dipl.ing.

Damijan BEDEK, dipl. ing.

MESTNA OBČINA MARIBOR,
ZAVOD ZA VARSTVO OKOLJA
MARIBOR SLOVENIJA



AIR POLLUTION TRENDS WITH REGARD TO THE TRAFFIC POLICY IN MARIBOR

Air is the medium in constant contact with the living world, although we may not be always aware of it because of its form and state. It is also a medium not knowing for nor discriminating between state borders, continents and living beings. Although the awareness of people in most parts of the world is at a high level today, there are still too many of those who pollute the air beyond measure, be it for the reasons of ignorance, carelessness or in the name of the capital. In most cases, air pollution is invisible. It can be detected only by sensitive measuring instruments, therefore people often underestimate this problem, which makes their attitude very dangerous. In urban centres, the use of fossil fuels results in high air pollution. Road traffic also considerably contributes to the pollution of air and the rest of the environment. Although cities and towns try to solve the serious difficulties caused by traffic, it is becoming more and more evident that it will be possible to manage the problem only by using environment-friendly transportation means. This refers to the promotion of public transportation and most certainly bicycles. Bicycles are the most economical means of transportation and the least harmful for the environment. They do not cause any poisonous gas emissions nor noise. They are also the fastest and most flexible means of getting around in urban traffic and traffic jams. The following article analyses air pollution trends with regard to individual pollutants in Maribor.

ENTWICKLUNG DER LUFTVERSCHMUTZUNG UNTER BEZUGNAHME AUF DIE VERKEHRSPOLITIK MARIBORS

Die Luft ist das Medium, das in ständigem Kontakt mit der lebendigen Welt steht, obwohl wir uns dessen aufgrund der Form und des Aggregatzustands der Luft nicht immer bewußt sind. Sie ist darüber hinaus ein Medium, das keine Grenzen oder Unterschiede zwischen Staaten, Kontinenten und Lebewesen kennt. Obwohl heute die Menschen in den meisten Ländern der Welt sich der Wichtigkeit der Luft stark bewußt sind, gibt es immer noch zu viele, die die Luft aus Unwissenheit, Gleichgültigkeit oder im Namen des Kapitals unsagbar verschmutzen. In den meisten Fällen ist die Luftverschmutzung unsichtbar. Sie kann nur durch empfindliche Meßinstrumente festgestellt werden, und deshalb unterschätzen viele Menschen dieses Problem, was ihre Einstellung sehr gefährlich macht. In städtischen Ballungsräumen führt die Verwendung fossiler Brennstoffe zu einer starken Luftverschmutzung. Der Straßenverkehr trägt ebenso beträchtlich zur Verschmutzung der Luft und der übrigen Umwelt bei. Obwohl Städte und Großstädte versuchen, die vom Verkehr verursachten schwerwiegenden Probleme zu lösen, zeigt sich immer deutlicher, daß die Situation nur durch den Gebrauch umweltfreundlicher Verkehrsmittel in den Griff zu bekommen sein wird. Dies bezieht sich auf die Förderung des öffentlichen Verkehrs und insbesondere auch des Fahrradverkehrs. Fahrräder sind das wirtschaftlichste Verkehrsmittel und für die Umwelt am wenigsten schädlich. Sie emittieren keinerlei giftige Gase und verursachen auch keinen Lärm. Sie sind außerdem im städtischen Verkehr und in Verkehrsstaus das schnellste und flexibelste Fortbewegungsmittel. Das nachfolgende Referat analysiert die Entwicklung der Luftverschmutzung in Maribor unter

TRENDI ONESNAŽENOSTI ZRAKA GLEDE NA PROMETNO POLITIKO V MARIBORU

Zrak je medij, s katerim je živi svet neprekinjeno v stiku, čeprav se zaradi njegove oblike in stanja, tega vedno ne zavedamo. Je tudi medij, ki ne pozna in ne loči ne meja držav in celin in ne živih bitij. Čeprav je danes osveščenost ljudi v večjem delu sveta na visokem nivoju, je še vedno dovolj in preveč tistih, ki bodisi iz neznanja, brezbrižnosti ali v imenu kapitala, zrak onesnažujejo čez vsako razumno mejo. Onesnaženje zraka je v večini primerov za oko nevidno, zaznavajo ga šele občutljivi merilni inštrumenti, zato je dostikrat odnos do tega problema podcenjujoč in s tem nevaren. V urbanih središčih se kot posledica uporabe fosilnih goriv pojavlja problem močnega onesnaženja zraka. Velik delež pri

SLOVENSKO onesneževanju zraka in okolja doprinese cestni promet. Čeprav se mesta trudijo, da bi odpravila velike prometne težave, postaja očitno, da bo promet v mestih mogoče obvladati le z uporabo okolju prijaznejših prevoznih sredstev. S tem je mišljeno vzpodbujanje uporabe javnih prevoznih sredstev in seveda koles, kajti kolo je najbolj varčno in okolju najmanj škodljivo prevozno sredstvo, saj ne emitira strupenih plinov in ne povzroča hrupa. Prav tako je v mestnem prometu in zastojih najhitrejša in najbolj prilagodljiva prevozno sredstvo. V članku so analizirani trendi onesnaženosti zraka v Mariboru glede na posamezne polutante.

AIR POLLUTION TRENDS WITH REGARD TO THE TRAFFIC POLICY IN MARIBOR

INTRODUCTION

In many large cities, the word traffic no longer means mobility but standstills. In European cities of approximately the size of Maribor, the problem of congestion due to motor vehicles arose as early as the beginning of the eighties. This resulted in the fact that the pollution load in town centres, as living environments, increased and made them less and less friendly for the residents. This had other consequences and, as the number of population increased, people moved from city centres to suburbs and small settlements in the surroundings.

In spite of that, state and city administration and other jobs remained in cities. One of the results were daily migrations from suburban settlements to city centres, which led to even worse traffic jams. After the independence of Slovenia, the import market for motor vehicles really bloomed and the mass consumption of passenger cars increased. Passenger cars play an important role in road traffic in cities, because their predominant use leads to the overloading of environment and space, extensive need for urban space, downgrading of certain neighbourhoods, and social problems.

Table 1 shows the level of motorization in Maribor per 1000 inhabitants. The data show that Maribor has much approached the European Union as far as the motorization level is concerned.

Table 1

Year	No. of passenger cars per 1000 inhabitants
1994	300
1996	379
1997	428

The structure of motor vehicles used in 1994 is shown in Table 2. If we analyse it, we can see that passenger cars have a prevailing role in Maribor. They are used three times more often than public transportation and almost two-and-half-times more often than bicycles or walking. Taking into account the age of data, we can conclude that they have an even greater role today.

Table 2

	Passenger cars [%]	Public transportation [%]	On foot, bicycle, other [%]
Maribor	55.8	20.4	23.8
Celje	69.8	4.7	25.5
Amsterdam	39.2	10.7	50.1

The number of shops, restaurants, agencies, services and other activities has greatly increased in the city centre. We can claim that the level of quick motorization of all classes of population has its roots in the following:

- increasingly better conditions for car purchase,
- relatively low price of gasoline,
- quick development of small companies,
- uncoordinated legislation concerning spatial planning and the planning of traffic,
- irrational use of all types of vehicles,
- an insufficiently developed and outdated public transportation system,
- (until recently) inconsistent reactions or decision-making and supervisory bodies and the justice system.

In addition to "mobility", motor vehicle traffic causes negative impacts on the environment. They can be indirect or direct, e.g. road traffic can impact water sources by construction works, the space by using it for infrastructure purposes, and by excavations for the construction of infrastructure facilities. It can pollute the environment by solid waste (abandoned sites, end-of-life vehicles, waste oil). Accidents and the resulting injuries and physical damage should not be neglected, either. The biggest impact of traffic, however, is the emission of exhaust fumes generated by the combustion of fossil fuels in internal combustion engines. In addition, traffic generates noise, which negatively impacts the environment and its inhabitants.

AIR POLLUTION IMPACTS

Modern motor vehicles are still traditionally powered by internal combustion engines, which burn a mixture of air and fuel. The fuel used by internal combustion engines consists of more than 200 components nowadays. During the combustion process, chemical energy of the fuel is transformed into mechanical work. Engines need air (oxygen) for this process. Complete combustion is practically non-existent. The oxidation process in combustion chambers of engines is very quick. Because the space in the chambers is relatively small, some parts of the fuel do not get in contact with air and cannot oxidise, while others oxidise only in part. Some fully oxidised parts of fuel become decomposed during the process at high temperatures. In the process of actual combustion, large quantities of exhaust gases and particles like CO, NO_x, unchanged HC, benzene, particulate matter, lead, etc. are formed. They are released into the atmosphere and cause pollution. Toxic emissions can be reduced by more than 90% by the use of catalytic converters.

Figure 1 shows variations in concentrations of individual pollutants, based on limit annual emission values (as stipulated by Slovene legislation). The figure shows that imission concentrations of carbon monoxide vary by 25% with regard to the annual limit value, taken from the TA Luft recommendations. The concentration of nitrogen oxides remains at about the limit value. After a slight fall in 1997, it rose again in 1998. Lead concentrations in particulate matter are falling, which is a result of the use of unleaded gasoline. The concentration of particulates has slightly increased in recent years, which is largely due to traffic. The concentrations of particulates and sulphur dioxide in air were most efficiently reduced thanks to the air pollution sanitation program, which greatly influenced the type and quality of fuels used for heating.

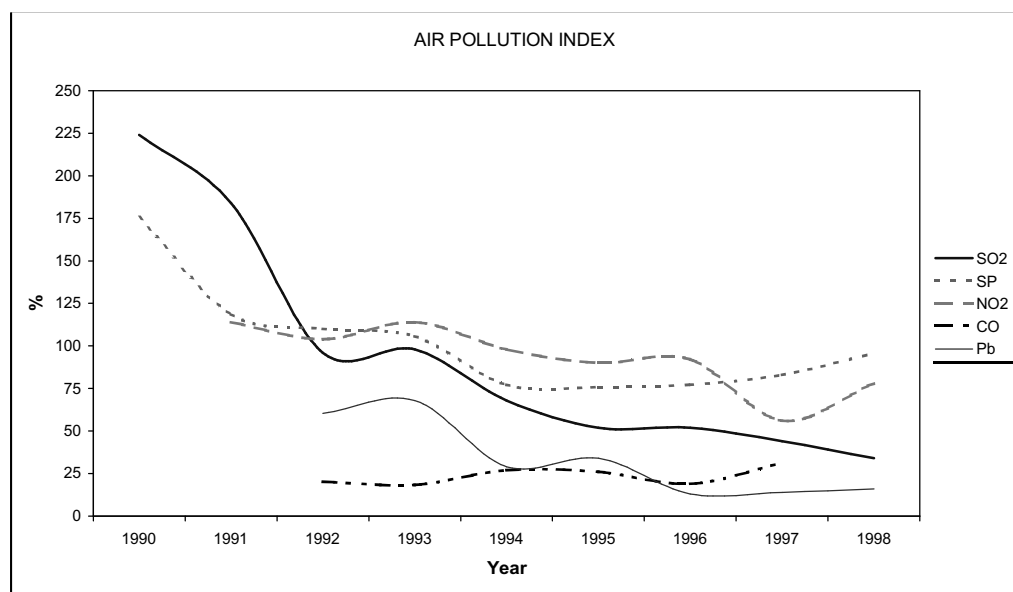


Figure 1

To get a better image of pollution loads generated by road traffic and its exhaust gas emissions, a numerical calculation of emissions was carried out. The historic part of Maribor on the left Drava bank was taken as a reference area. The area was bordered by Maldinska ulica (street) to the north, Titov most (bridge) to the east, the Drava river to the south, and Strossmajerjeva ulica (street) to the west. The size of the area was approximately 800 x 800 m.

The input data on traffic density were taken from the study Prometni model mesta Maribor - Simulacija prometnih obremenitev cestnega omrežja počasni priključitvi Koroškega mostu (Model of Traffic in Maribor - Simulation of the Road Network Loads by Traffic after a Temporary Connection of the Koroski Bridge). It was supposed that the speed was the same during the day and at night, i.e. 50 km/h. The share of trucks was 3% during the day and 1% at night.

quantities are expressed in tons per year. They are shown in Table 3. It should be noted that carbon dioxide is not harmful. It is nevertheless considered as the main cause of the greenhouse effect.

Table 3

Substance	Tons / year
CO ₂	5081
CO	65.7
NO _x	23.4
HC	9.71
PM	0.56
Benzene	0.015
Pb	0.9

The Republic of Slovenia has signed the Kyoto Protocol and thus undertook the obligation to reduce, between 2008 and 2012, the emissions of greenhouse gases by average of 8% with regard to the starting point in 1986. It will be impossible to implement the stipulations of the Kyoto Protocol by reducing greenhouse gas emissions in one sector only; on the contrary, it will be necessary to use all possibilities, one of which is traffic.

NOISE IMPACTS

Another negative impact of traffic upon the environment and people is noise. It has been stated that almost 25% of the entire European population are subject to traffic-generated noise exceeding 65 dB(A). The picture of noise pollution is not the same all over Europe.

Noise from motor vehicles is caused mainly by engines and the friction of vehicle with the road and air. Noise levels depend on a number of factors. The most important ones are: traffic density, vehicle's speed, the percentage of trucks, the type of roads and pavements. The problem of noise generated by traffic is increased in areas where frequent changes in speed occur, such as road crossings, street lights and slopes. In general, those areas are urbanised and often densely populated.

A calculation of noise loads posed upon the reference area was also made. The same input data were used as for the road traffic emissions calculation. Slovene legislation stipulates that 60 dB(A) should not be exceeded during the day and 50 dB(A) at night in areas like the one for which the calculation was made. The achieved results show that noise pollution is much too high especially in the buildings along main streets.

The calculated daily noise level along the streets with the highest load reached up to 80 dB(A) and over. Such noise levels adversely impact people living in those buildings or spending longer periods of time in them. In the same streets, noise levels reached up to 65 dB(A) or more at night.

CONCLUSIONS

Only today are we becoming aware of the consequences caused by our step-motherly and negligent attitude. We know that we should maintain the state of the environment that will enable survival to our successors. We have indicated the impacts of motor vehicles on air and noise impacts upon the environment. Of course it will be necessary to at least limit, if not reduce, those impacts in future. In order to achieve that, well considered measures will be needed. It is possible to reduce air pollution and noise levels by:

- awareness raising,
- promotion of cycling, walking and use of public transportation,
- modernisation of busses and use of gas-driven busses,
- introduction of unified ride passes and "Park and ride" system,
- construction of bicycle paths,
- sanctions for those obstructing bicycle traffic (e.g. parking on bicycle paths),
- spatial and traffic solutions that will guarantee a higher quality of life,
- any other appropriate measures.

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IMPLEMENTING THE NOTTINGHAMSHIRE CYCLE STRATEGY

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I am Head of Strategic Transport for Nottinghamshire County Council, a local authority with a population of 750,000. I was responsible for preparing the County's Cycling Strategy in 1997.

TITLE: IMPLEMENTING THE NOTTINGHAMSHIRE CYCLE STRATEGY

To update delegates on progress on the county's Cycling Strategy. This will include reports on:

- The large increase in cycling to County Council workplaces, within the context of its own Commuter Plan.
- The development of new cycle routes in the County including the national Millennium Cycle Route. These provide access for cycle journeys to work and for leisure.
- The integration of the promotion of sustainable travel modes with road safety objectives.
- The development of an effective Cycle Audit system to ensure that all new transport infrastructure takes account of the needs of cyclists.
- A comprehensive walking and cycling strategy for the town of Worksop.

DIE EINFÜHRUNG DER NOTTINGHAMSHIRE RADFAHR STRATEGIE

Um die Delegierten auf den neuesten Stand des Fortschritts der Fahrrad Strategie zu bringen beinhaltet dies Berichte über:

- den großen Anstieg im Radfahren zu landesverwaltungs Arbeitsstellen, im Zusammenhang mit dem eigenen Arbeitsweg Plan
- Die Einrichtung neuer Fahrradwege im Land einschließlich der nationalen Millenium Fahrrad Route. Diese bieten Zugang für Radfahrten zum Arbeitsplatz und Freizeit Radfahrten.
- Die Integration und die Bekanntmachung von durchführbaren Reisearten im Hinblick auf Straßensicherheit.
- Die Entwicklung eines effektiven Radfahr Revisions Systems um sicherzustellen daß alle neue Infrastruktur den Anforderungen der Radfahrer entspricht.
- Eine umfangreiche Wander- und Radfahrstrategie für die Stadt Worksop

UVAJANJE NOTTINGHAMSHIRESKE KOLESARSKE STRATEGIJE

Z namenom, da bi člane seznanil z najnovejšim stanjem napredka kolesarske strategije, vsebuje prispevek sledeča poročila:

- o velikem naraščanju uporabe koles za prihod na delo na deželni upravi
- o otvoritvah novih kolesarskih poti v deželi, vključno z nacionalno Tisočletno kolesarsko potjo. Te olajšujejo kolesarjenje na delo, kot tudi kolesarjenje v prostem času.
- o integraciji in obveščanju o izvedljivih načinih potovanja, z ozirom na varnost na cesti.
- o razvoju učinkovitega kolesarskega revizijskega sistema, z namenom da bi zagotovili, da vsa nova infrastruktura ustreza zahtevam kolesarjev

IMPLEMENTING THE NOTTINGHAMSHIRE CYCLING STRATEGY**THE NOTTINGHAMSHIRE AREA**

The County of Nottinghamshire is located in the East Midlands Region of the United Kingdom. With the City of Nottingham (which forms a separate administrative local authority) it has a population of just over 1 million.

Nottinghamshire can be divided into three main areas. The Greater Nottingham conurbation is located in the south west of the County with a population of around 600,000. The next largest urban area is the former Coalfield Area of Mansfield and Ashfield. This area has seen a major decline in traditional industries during the 1980s and early 1990's, particular in coal mining. The remaining area of the County is largely rural in nature and includes the market towns of Worksop, Retford and Newark and the extensively wooded area of Sherwood Forest.

THE NOTTINGHAMSHIRE CYCLING STRATEGY

A draft version of the Strategy was outlined at the Velo City Conference in Barcelona in September 1997. The final strategy was published in November 1997 and has been extremely well received. It sets the framework for a wide-range of cycling activity throughout the County.

At the heart of the Strategy are a set of key objectives within related targets. These relate to the UK Government's Cycling Strategy "Vision" which contains the national target of doubling the number of trips by cycle (on 1996 figures) by the end of 2002 and quadrupling trips by cycle by the end of 2012.

The local targets for Nottinghamshire are set out below. It is important to stress that they are not easily achievable but they are realistic. Even if Nottinghamshire County Council is successful in achieving a significant increase in funding to implement new cycling measures, their effect will be limited without the successful implementation of other measures in the UK Government's Integrated Transport Strategy which was published in July 1998 - in particular the major change in the priority previously afforded to private cars.

Progress since November 1997 is best outlined by referring to the 5 Key Targets.

TARGET 1 AN INCREASE IN CYCLE MODAL SHARE

A new system of monitoring by sample cordon surveys has been introduced on main radial routes in the Greater Nottingham conurbation. Specialist equipment has been purchased which can be used on dedicated routes as well as on the main carriageway. A comparison of cycle flows from counts on five main routes between 1990 and 1998 shows an average increase of 19.5%. The new equipment will now provide the opportunity for an annual comparison and occasional supplementary surveys will examine changes to journey lengths.

TARGET 2 A REDUCTION IN THE CYCLING CASUALTY RATE

The level of road accident casualties can vary as a result of a wide range of contributory factors. Nevertheless an analysis of figures over a number of years can determine statistically significant trends.

It is acknowledged that a large number of cycling accidents are not reported. It should also be recognised that, in a situation where cycling casualty rates are reducing, a large increase in cycle usage may still result in a small increase in the actual number of accidents.

Total number of cycle casualties in Nottinghamshire

1996	542
1997	542
1998	Not available at present

TARGET 3 A REDUCTION IN CYCLE THEFTS

A major deterrent to cycle usage in the County is the threat of cycle theft. This threat can be reduced by improved cycle parking facilities, especially in terms of visibility and security. Partnership working with the Police is developing with better supervision arrangements, registration systems and the increasing importance of Closed Circuit T.V. schemes.

Total number of cycle thefts

1996	7150
1997	4195
1998	4558

Example of good practice:

CYCLE FACILITIES

"STEPS" is the County Council's commuter plan that aims to reduce the number of drive alone journeys to the worksite. It achieves this by promoting a number of travel options such as Car sharing, Public Transport and walking. Another key commuting alternative is cycling and "STEPS" has a number of features which cater for the commuter cyclist. Most notable are the following....

1. **"STEPS" Cycle Centre** - a dedicated complex combining secure cycle storage area with CCTV monitoring and a changing room with showers, toilets, dryers and lockers.
2. **Pool Bikes** - which can be used for covering business related journeys
3. **Cycle Loan Scheme** - Where staff can purchase bikes at a favourable rate of interest.
4. **B.U.G.** - (Bicycle User Group) where cyclist and potential cyclists can help shape the policies and features designed to promote the use of the cycle. This group meets on a quarterly basis.

TARGET 4 HIGH QUALITY CYCLE NETWORK EXPANSION

Nottinghamshire County Council is putting increased emphasis on developing Green Travel Plans, with the main focus on the journey to work (Commuter Plans) and the journey to school (School Travel Plans). Recent investment in new routes has been dominated by providing for the National Cycle route from Dover to Inverness but there have also been new and improved links to major workplaces.

The purpose of the Travel Plans is for the organisation (employer or school) to identify the particular transport problems relating to their site and, with the guidance of the County Council, to identify the appropriate solutions. This helps to define appropriate roles and responsibilities. For example, the company or school may assist with a travel awareness campaign to encourage

less use of the private car especially for short journeys. It may provide a subsidy for public transport use or offer improved conditions for cyclists as demonstrated above. It will be the responsibility of the County Council to provide improved road conditions in the vicinity of the site which could include new cycle routes or priority at junctions.

The County Council's priority in the future will be to ensure that only high standard quality routes are provided.

TARGET 5 IMPLEMENTATION OF CYCLE AUDITS

All new transport infrastructure and major development proposals will be audited to ensure the needs of cyclists are fully considered. The new system is almost finalised and will assess schemes using checklists based on the five cycle infrastructure performance criteria:

SAFETY

Designs that minimise casualties and perceived dangers for cyclists, pedestrians and other road users.

COHERENCE

The cycle infrastructure should form a coherent entity, linking all trip origins and destinations; routes should be continuous and consistent in standard.

DIRECTNESS

Routes should be as direct as possible, based on desire lines, because detours and delays will deter use.

ATTRACTIVENESS

Routes must be attractive to cyclists on subjective as well as objective criteria. Lighting, personal safety, aesthetics, noise and integration with the surrounding area are important.

COMFORT

Cyclists needs smooth, well-maintained surfaces, regular sweeping, and gentle gradients. Routes must be convenient to use and avoid complicated manoeuvres and interruptions where momentum and speed may be lost.

BOLTON: COMING FULL CYCLE**Stuart Murray**

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Councillor Murray chairs the Cycling Forum in Bolton and is for the Greater Manchester Council for Voluntary Services providing support to voluntary groups on transport related matters.

John Parkin heads the Civil and Environmental Engineering Group at Bolton Institute, chairs the Local Agenda 21 Transport Group in Bolton and is a consultant transport planner and engineer.

BOLTON: COMING FULL CYCLE

The paper describes lessons learnt in developing a cycling strategy and generating positive publicity. Firstly it describes policy definition and the struggle to have the bicycle recognised as a solution rather than as a safety problem. Secondly it describes the difficulties encountered in giving cycling a place in the setting of spending programmes. Finally it describes the difficulties of achieving physical measures and the resistance particularly from private sector interests.

The experience in Bolton shows how small resource allocations need to be spent appropriately to create a stronger position from which build. It emphasises careful prioritisation to expand cycling numbers, and therefore interest and involvement from the potential cycle market. The need for strong community and voluntary sector support is demonstrated as a key factor.

BOLTON: AUF DAS RAD GEKOMMEN

Dieses Referat beschreibt die Lektion, die wir bei der Entwicklung einer Fahrradstrategie und dem Bemühen um positive Publicity gelernt haben. Zunächst wird über die Formulierung der Strategie berichtet und auf den Kampf um die Anerkennung des Fahrrads als Lösung anstatt als Sicherheitsproblem eingegangen. Zweitens beschreibt das Referat die Schwierigkeiten, mit denen wir uns konfrontiert sahen, als wir in den Budgetprogrammen auch dem Fahrradverkehr Platz einräumen wollten. Schließlich wird noch beschrieben, wie schwierig es war, bauliche Maßnahmen durchzusetzen, und welcher Widerstand insbesondere aus dem privaten Sektor kam.

Die Erfahrung in Bolton zeigt, daß geringe finanzielle Mittel auf geeignete Art und Weise eingesetzt werden müssen, um eine stärkere Ausgangsposition zu erreichen. Es wird betont, wie vorsichtig dem Fahrradverkehr Vorrang eingeräumt werden muß, um die Anzahl der Radfahrer zu erhöhen und damit Interesse und Beteiligung seitens des potentiellen Fahrradmarktes zu erzielen. Die Notwendigkeit einer starken Unterstützung seitens der Gemeinschaft und freiwilliger Initiativen wird als einer der Schlüsselfaktoren illustriert.

BOLTON : PRIHAJAOČI ZAKLJUČENI KROG

Prispevek opisuje učne ure razvijajočih se kolesarskih strategij in proizvedenih pozitivnih reklam. Na samem začetku opisuje definicijo politike in boj, da bi kolo prepoznali kot rešitev in ne zgolj kot varnostni problem. Najprej opisuje probleme, s katerimi se srečuje kolesarstvo, ko ga skušamo uvrstiti v okvir zapravljaljskih programov. Končno opisuje tudi težave pri doseganju fizičnih meril in težave v nasprotovanjih predvsem z interesi privatnega sektorja.

OTS Izkušnje na primeru Bolton-a nam kažejo, kako je potrebno manjše vire nakazil ustrezno porabiti, da bi si ustvarili trdnjši položaj kot izhodišče. Povdarek je na prioritizaciji povečanja kolesarskih števil in s tem zanimanje ter vključitev potencialnega kolesarskega trga. Kot ključni faktor je demonstrirana potreba po trdnjši skupnosti in prostovoljna podpora sektorja.

BOLTON: COMING FULL CYCLE

INTRODUCTION

Bolton is a town of population 265,000 with a significant industrial past in cotton spinning located in the North West of England. Many mills are now redundant and the economy has developed into the service sector. Bolton is part of the Manchester conurbation of 2.5 million people, but by virtue of its distance from Manchester City centre (13 miles) and the valley of the River Irwell maintains a distinct character. 75% of the employed residents of the Borough work within the Borough and this is a significant proportion compared with neighbouring Bury. 16% of the population of the Borough lives within a mile (1.6 kilometres) of the town centre. There are four townships of Horwich, Westhoughton, Farnworth and Little Lever within the Borough.

Bolton nestles under the western foothills of the Pennine Mountain range and is subject to the regular influences of weather fronts from the Atlantic Ocean resulting in a climate much wetter than on the East of England. Bolton town centre lies 100 metres above sea level and the northern parts of the Borough, at 450 metres above sea level, frequently experience snow in winter. At the urban fringe (around two miles from the centre), arterial roads to the North and West of the town lie at around 40 and 50 metres above the town centre.

Cycling has been a very popular pastime in the region for around 100 years, but in recent times the number of road clubs and the numbers in those road clubs has dwindled. The three remaining clubs are the Lancashire Road Club, Clarion Cycling Club and the Cyclist's Touring Club. Each is represented on the Cycling Forum in Bolton and regularly organises rides and supports events in the area.

Cycle use as a means of commuting has plummeted and accounts for 1.32% of total journey to work trip making compared with 3.35% nationally (OPCS, 1991). The drier and flatter East of England has the highest percentages of cycle commuting.

ANTIPATHY TO CYCLING IN BOLTON

The most common initial objections raised against cycling concern the hills and the weather. Exploring further other concerns soon emerge. As with much of the rest of Britain, the speed and volume of traffic and the lack of enough segregated cycleways to maintain safety are the real issues. Casualty statistics in the Borough conform to the national picture with accident rates amongst cyclists being disproportionately higher than for other categories of road user. Concern for safety is supported by other research (Henson et al, 1997) which shows that cycling deterrence factors are wide ranging in nature but that "unpleasantness of traffic/pollution" and "personal security" are significant. Other factors include hilliness, poor motor vehicle driver behaviour, poor road surface and physical effort. Image, convenience and load carrying ability were other factors, but of less significance. Using stated preference techniques Hopkinson and Wardman (1996) demonstrate that risk related factors in cycling have a strong bearing on route choice and that time savings must distinguish between delay time savings and route length effects.

Where cycle schemes are introduced, very often in conjunction with other highway works, they add only small fractions to the total provision for cyclists. They do not necessarily help cyclists feel that the overall journey is safer, even though particularly difficult junctions may be improved. On the other hand, there are voices raised from aggrieved sections of the motoring public who feel that some of 'their' road space has been lost, or worse still, wasted by the provision of a facility which is little used.

For cycling campaigners in the town, the defence of provision for cyclists in the context of such small scale measures and significant negative reaction to them is a real uphill struggle. Against the background of low cycle usage and a continuing

increase in the growth of traffic, the promotion of further cycle provision is not a position that many seek to defend. The local press forms a natural outlet for expressions of local antipathy and the letters pages swell when traffic management schemes are introduced. Some heart can be taken from the fact that adverse comment is not limited to cycle schemes. Pedestrian schemes, traffic calming, and bus priorities all provoke a similar debate.

The terms of these debates tend to put cycle campaigning on the defensive. Much of the rebuttal of adverse comment has to be couched in terms of the safety debate. It is difficult to shift the ground towards a claim that the right to road space should not be claimed automatically by the car. This will remain true until a critical mass of both on and off highway provision is in place and the volume of cyclists has expanded to the point where the antipathy is readily tackled by evidence of significant use.

GENERATING THE STRATEGY

The Cycling Strategy in Bolton aims to increase cycle use. The local target reflects the national target of a doubling of the number of cyclists on the road by 2000 and a further doubling by 2010 (DETR, 1996). Many doubt the value of targets, especially ambitious ones. It is evident that at least some of their value has been in giving a spur to the generation of cycling strategies. It has justified action at a local level in Bolton, building on the work of a successful Cycling Forum that has been in existence for a number of years.

The strategy objectives start from a concern over safety. They confirm the need to recognise and maximise cycling as a transport mode in itself. The need to overcome road dangers has to inform the speed and direction of the strategy and this is partly because the strategy would stand little chance of public acceptance if it did not address safety directly. There is useful synergy between this objective and the fact that significant resource is already allocated to resolving safety problems.

The promotion of cycling as a transport mode has barriers other than safety to overcome. The results of local survey work (Tanner, 1997) reveals that other basic facilities are vital. These include safe and secure parking facilities and facilities to shower and change in comfort. Future work will involve quantifying progress in terms of increasing provision of this sort. The strategy is important to help benchmark progress and to develop a lever which will be useful in widening the debate to others. These may include, for example, large local employers.

The other opportunities which it is hoped will develop from the Cycling Strategy relate to links with other strategic thinking. This includes a broad span, ranging from development control issues to tourism, from external funding opportunities to health improvement. On a less tangible, but vital, front, there is a need to enhance the level of political support which cycling can command. It has to be an approach which compliments and adds value to the aspirations and interests of other groups and communities in the town.

The Cycling Strategy has to be a working tool and used to monitor progress and evaluate where future efforts need to be directed. The Cycling Forum regularly has opportunity to comment on the cycle audits that are now part of any highway improvement works. The forum has asked that some of the assessments of highways maintenance needs are carried out on a bicycle. Overall sustainability indicators as part of the Local Agenda 21 process include the length of cycleway provided. In addition, some effort is going into producing a programme that commands the support of the active cycling campaign groups involved with the Cycling Forum - that is likely to be the basis for much of the effort needed to revive and develop cycling in Bolton in all its forms.

FUNDING THE STRATEGY

Transport capital spending programmes of local authorities in the UK are categorised under four headings: package bid, local safety schemes, bridges and structures and highway maintenance. Table 1 below indicates the 1999/00 bid for central government grant and the projected out-turn for 1998/99 for Bolton MBC transport capital spending (Bolton MBC, 1998).

Table 1. Bolton MBC Transport Capital Spending

Notes

1 All figures in thousands.

2 Bid for 1998/99 was £6,471, allocation therefore 28% of bid.

capital bid for 1999/00 is specifically earmarked for cycle schemes. In addition to spending specifically for cycle schemes,

	1999/00 Bid		1998/99 projected out-turn	
	Total	Cycle schemes	Total	Cycle schemes
Package Bid	£1,084	£60	£271	-
Local Safety Schemes	£650	-	£246	-
Structures	£2,800	-	£732	-
Maintenance	£1,463	-	£550	-
Totals	£5,997	£60	£1,931	£0

elements of spending on local safety schemes and highway maintenance spending may also have an effect on provision for cyclists. In general, however, the spend is directed towards maintaining the status quo as evidenced by the 66% of projected 1998/99 out-turn on structural and highway maintenance works.

The Cycling Forum would like to promote cycling provision through an audit procedure of all highways schemes, it is unlikely that a separate budget to identify the cycle related elements would be particularly useful. The commissioning of properly audited work should include all of the elements of a scheme and there will be some savings on each element through the synergy created by a complete scheme. It is also difficult to attribute the value of some elements of highways work which are of assistance to cyclists. The creation of a bus lane will help cyclists but there is no immediate benefit in assigning part of those costs to a separate cycling account.

On the other hand, the cycling interests in Bolton recognise that lack of finance is the main reason given for slow progress. At 1% of the value of the bid for transport investment, the amount earmarked for cycling schemes is very low, especially when the direction of transport policy is moving towards the promotion of this mode. Constituted in the Cycling Forum, Bolton has an active group of interested citizens with knowledge, experience, interest and perceptions of current flaws in the system which leads to an expertise in identifying the needs of cyclists and ideas on how to meet them. It is important that this group has the opportunity to witness and influence change on the ground. This makes it desirable for some resources to be made available to the group. It is also the case that an understanding of the true value of cycle related investment is necessary as part of the wider assessment and evaluation of the cycling strategy. This evaluation will comprise consideration of synergy with other schemes, an ability to generate further cycle traffic and in overcoming specific local problems. It may not simply be a financial evaluation as such would potentially understate the full benefits.

The issue is to find a position which offers a realistic balance between clear, bold statements of committed expenditure to cycling and the incorporation of cycling investment into more significant schemes where the individual allocation for cycling is not separately identified. The approach which is evolving in Bolton attempts to do this. There is no doubt that the incorporation of cycling issues into the audit procedures for all highway related projects is bearing fruit in this regard. The largest structural maintenance scheme undertaken during 1998/99 was on a stretch of the A58 Moss Bank Way ring road. An opportunity was taken in this scheme to reduce the carriageway width from two lanes to one, and this released space for safer right hand turns and for cycle lanes to be introduced. A good example of another way in which this inclusive approach may develop is through the strengthening of development control standards (especially for parking) which inform local planning decisions.

IMPLEMENTATION

Cyclists may be classified into types depending generally on their experience and speed. Slower and less experienced cyclists require the highest levels of segregation from highway traffic, while faster and more experienced cyclists require routes which allow for maximum speed of travel and least deviation from route over short distances. Cyclists in the former category are likely to welcome routes which go off highway and have special facilities at busy junctions to allow negotiation by safe means. Such facilities are likely to be less favoured by faster cyclists.

Bolton has a dense street pattern with traditional grids of terraced housing spreading between arterial routes. Arterial routes often have relatively wide carriageways, but have much frontage activity and car parking. There are relatively few open spaces, but where there are parks, especially close to the town centre, the Leisure Services Department has already begun to provide cycle routes.

In implementing the schemes an attempt must be made to balance provision on arterial routes between the needs of slower and faster cyclists within the constraints of a street pattern which is congested and offers little spare cross section for cycle facilities.

Work within the Cycling Forum is now attempting to listen to group members and to seek to make progress on issues which matter to them. This does not prevent comment and discussion on the detail of any of the schemes which the Highways Sub-Committee are promoting as elements of the Council's programmes. In this context, control over a relatively small budget could produce some real benefits for cyclists and additional rewards in terms of enhancing the interest and enthusiasm of active members. The Deane, Derby and Daubhill regeneration area of dense traditional housing in Bolton has a transport component focused around two radial routes into the town centre. Significant effort and funding is being invested in the enhancement of these routes by improving public transport and enhancing the built environment. Other resources have been attracted to improve parks and leisure facilities. Cycling Forum members have been drawn into discussions about connecting cycling facilities between these radials and other key points in the cycle network proposed for Bolton. Opportunities to develop cycle provision by means of quieter streets and some off-road provision are being sought. A successful request to allocate some resources for the support of this work has been made and could set the direction of future work.

Strong community and voluntary sector support in Bolton can be accommodated within a framework that draws on a strategy that now routinely encourages cycling to be considered as part of the preparation of highways schemes. More work needs to be carried out now with elements of the spending programmes which are probably much smaller in financial terms but which potentially offer greater rewards in terms of local involvement and participation.

Such strong voluntary sector support is in marked contrast to the attitude of development and commerce. There has been significant out-of-town retail and leisure development in Bolton in the last three years. The most significant sites include the Middlebrook complex to the West which now hosts the stadium for Bolton Wanderers Football Club. The site includes a cinema, sports and non-sports related retail outlets and other leisure facilities. To the North on the Tonge Valley a further large cinema complex and associated retail and leisure facilities have been constructed. The developers primary concern has been to ensure appropriate access to such development sites for car based customers. Consideration of similar appropriate access for cyclists has not been an issue of prime concern, hence requiring regular pressure from the Cycling Forum for the needs of cyclists to be considered. Such pressure tends to lead to bi-partisan discussions about the merits or otherwise of cycling and is unlinked to the general moves in transport strategy in the UK.

CONCLUSIONS

Bolton Cycling Forum has been trying to secure a base on which cycling solutions can be developed as part of Bolton's response to increasing car use. There is the simple recognition that a turn around cannot be achieved quickly and that the limited work undertaken is easy to criticise as misplaced or ineffectual. However, a start has been made and clear opportunities have arisen through changing national priorities, partly reflected in the allocations of resources. The Cycling Strategy will put Bolton in a position to grasp those opportunities more readily. It also allows Bolton to work through publicity plans and other mechanisms which generate local interest and commitment to the work being undertaken.

The work in Bolton shows how even small allocations of resource need to be spent appropriately to create a stronger position from which to argue for more. It emphasises the need to carefully prioritise work to expand cycling numbers, and therefore interest and further involvement from the potential cycle market. The need for strong community and voluntary sector support is a key factor in the gestation of cycling policy and implementation.

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FRENCH CITIES HAVE NO MORE CHOICE : THEY MUST PLAN CYCLE FACILITIES

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WEDNESDAY

ENGLISH

FRENCH CITIES HAVE NO MORE CHOICE : THEY MUST PLAN CYCLE FACILITIES

For several years, the Government intend to promote bicycle as an alternative mode of travel. But population was divided between the "cyclists" and the "nothing else but the car"

In the same time, more and more inhabitants ask for livable and safety towns.

The local authorities must find how to encourage a gradual reduction in the use of private cars in cities ; they begin to consider cycling as a serious form of urban transport !

This contribution will concern a general view of the effectiveness of national and local bicycle transport policies on the last three years.

A national policy :

HOW TO REACH THE GOAL OF SUSTAINABLE DEVELOPMENT ?

Local policies :

DEUTSCH

STRATEGIEN ZUR FÖRDERUNG DES FAHRRADVERKEHRS IN DER STADT

Die Regierung ist schon seit mehreren Jahren bestrebt, das Fahrrad als alternatives Fortbewegungsmittel zu fördern. Die Bevölkerung war jedoch in zwei Lager gespalten: die „Radfahrer“ und die „reinen Autofahrer“. Gleichzeitig fordern immer mehr Einwohner sichere und lebenswerte Städte.

Die Lokalbehörden müssen einen Weg finden, den Gebrauch des Privat-PKW in der Stadt nach und nach zu reduzieren. Sie beginnen, das Radfahren als ernsthafte Form der Fortbewegung im städtischen Raum zu betrachten.

Dieser Beitrag gibt einen allgemeinen Überblick über die Wirksamkeit nationaler und lokaler Fahrradverkehrsstrategien der letzten drei Jahre.

Eine nationale Politik:

WIE ERREICHT MAN DAS ZIEL NACHHALTIGER ENTWICKLUNG?

Lokale Strategien:

WIE ÜBERZEUGT MAN DIE AUTOFAHRER, ÖFTER MAL AUF DAS FAHRRAD UMZUSTEIGEN?

STRATEGIJE POSPEŠEVANJA URBANEGA KOLESARSKEGA PROMETA

Že nekaj let poskuša vlada pospeševati kolesarjenje, kot alternativno sredstvo potovanja. Sama populacija pa se je razdelila na "kolesarje" in na "nič drugega kot avto". Istočasno pa si vse več in več prebivalcev želi znosna in varna mesta.

Lokalne oblasti morajo tako najti ustrezno pot k postopnemu zmanjševanju uporabe osebnih vozil v mestih; pričenjajo smatrati kolesarjenje kot resno obliko urbanega transporta!

Ta prispevek obravnava in daje splošni vpogled učinkovitosti nacionalne in lokalne kolesarske transportne politike v zadnjih treh letih.

Nacionalna politika:

KAKO DOSEČI CILJ PODPRTEGA RAZVOJA?

Lokalna politika:

KAKO PREPRIČATI VOZNIKE AVTOMOBILOV K POGOSTEJŠEMU KOLESARJENJU?

FRENCH CITIES HAVE NO MORE CHOICE : THEY MUST PLAN CYCLE FACILITIES

For several years, the Government intend to promote bicycle as an alternative mode of travel. Technicians, scientific experts and bike user groups have worked together to introduce european models for a bicycle friendly infrastructure . Successive policies have been regularly decided. But population was divided between the " cyclists " and the " nothing else but the car "

Following the Earth Summit in Rio, the Government published a policy of sustainable development. In the same time, more and more inhabitants ask for livable and safety towns .

So the local authorities must find how to encourage a gradual reduction in the use of private cars in cities ; little by little, they begin to consider cycling as a serious form of urban transport !

The main part of this contribution will concern a general view of the effectiveness of national and local bicycle transport policies on the last three years.

A NATIONAL POLICY**HOW TO REACH THE GOAL OF SUSTAINABLE DEVELOPMENT ?**

On one hand, municipalities must adopt a urban transport plan which include continuous cycle routes. On the other hand, law on " protection of the air against pollution and for a rational use of energy" combines economic and ecological goals : cycle facilities must be planned when there are road works or new road projects.

The " R.A.C. " is an official technical publication with all the rules and advice for cycle facilities.

LOCAL POLICIES**HOW TO CONVINCE CAR DRIVERS TO CYCLE MORE OFTEN ?**

The " club des villes cyclables" has grown up and count now 350 cities .

Cycling Plan in Paris gives interessant results.

An experience of " one day without cars " in La Rochelle;

Pollution alerts in metropolitan area : only cars with a selected registration number can drive slowly on these days.

PLANNING FOR PEDAL-POWER

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ENGLISH

PLANNING FOR PEDAL-POWER

There are several ways in which conditions for cyclists have been improved in Edinburgh in the past 10-15 years:

- a web of off-road routes has been built
- in one area a finer web of cyclist routes has been established on the road network
- several radial routes have been made more cycle friendly
- many neighbourhoods have been redesigned so that general traffic is more pleasant to cycle amongst

One result is that there are more cyclists, motorists are more cycle aware, more people understand how planning for cycling contributes to the City's Environment Strategy.

DEUTSCH

PLANUNG FÜR FAHRRAD-POWER

In Edinburgh haben sich die Bedingungen für die Radfahrer in den letzten 10-15 Jahren in verschiedener Hinsicht gebessert:

- Es wurde ein Netz von separaten Radwegen gebaut.
- In einem Gebiet wurde ein engmaschigeres Netz von Radrouten innerhalb des Straßennetzes angelegt.
- Verschiedene radiale Routen wurden fahrradfreundlicher gestaltet.
- Viele Bezirke wurden umgestaltet, so daß das Radfahren im allgemeinen Verkehr jetzt angenehmer ist.

Ein Ergebnis dessen besteht darin, daß heute mehr Menschen mit dem Rad fahren, die Kraftfahrer sich der Radfahrer jetzt verstärkt bewußt sind und mehr Menschen verstehen, daß die Planung des Fahrradverkehrs einen Beitrag zur Umweltstrategie der Städte leistet.

Es werden verschiedene Untersuchungen zitiert, anhand derer die Entwicklung des Fahrradgebrauchs seit der Einführung des ersten umfassenden Fahrradverkehrsplans für die Stadt verfolgt wird.

SLOVENSKO

NAČRTOVANJE NOŽNE MOČI

V zadnjih 10. do 15.-ih letih obstaja nekaj načinov izboljšanja pogojev kolesarjev v mestu Edinburgh :

- zgrajena je bila mreža necestnih poti,
- na enem območju je bila v okviru cestnega omrežja razvita jasnejša mreža kolesarskih poti,
- kar nekaj kolesarskih poti, opremljenih s črtami, je postalo prijaznejše kolesarjem,
- kar nekaj sosesk je bilo preoblikovanih, tako da je ugodneje kolesariti med ostalim prometom.

Eden od rezultatov je ta, da je sedaj več kolesarjev, da so motoristi bolj osveščeni kolesarjev, da pričenjajo ljudje razumeti kako kolesarsko načrtovanje prispeva k Strategiji mestne okolice.

Predstavljene bodo različne primerjalne kolesarske raziskave, po tem, ko je bil prvi izčrpen kolesarski načrt že pripravljen.

WEDNESDAY

PLANNING FOR PEDAL-POWER

1 INTRODUCTION

In 1985 the former Lothian Regional Council received a consultants' report¹ on a Cycle Strategy for Edinburgh and its hinterland within a radius of approximately 50 km. This report formed the basis of much work to improve conditions for cyclists. Prior to this, after a re-organisation of Scottish local government in 1975 the former Edinburgh District Council and Lothian Regional Council had agreed to a policy of purchasing disused railways as they became available with the Region purchasing those that might have some long term transport use. In the meantime they could be laid out as walkways for people to walk or cycle along.

This paper looks at different elements of the cycle strategy which have been implemented by a variety of organisations. At the end of the paper results are presented of counts of cyclists entering the city centre.

2 STATUTORY PLANNING

The Lothian Structure Plan contains policies and proposals for the strategic development of land in the area centred on Edinburgh. The 1978, 1985 and 1994 versions^{2,3,4} all contain policies to assist the promotion of cycling. Each of these plans looked up to 15 years ahead. Local planning authorities prepare more detailed, Local, Plans which look forward for a shorter timespan and can include site specific proposals, such as for off-road cycle routes, as well policies covering provision of cycle parking; cycle paths to link homes, schools, workplaces, the countryside; etc. When particular development applications are considered on sites adjacent to proposed cycle facilities it is sometimes possible to persuade applicants to pay wholly or partly for a link to, or section of, the proposed facility.

In Scotland the National Planning Policy Guidelines^{5,6} promoting sustainable forms of transport such as cycling are still being redrafted and they may not be finalised until after next month's elections for the Scottish Parliament.

3 ROADS AUTHORITY POLICIES

As part of the review of policies which led to the 1994 Structure Plan⁴ the local authorities and the Scottish Office commissioned a transport and environment study by MVA et al⁷. This showed that Edinburgh's transport problems will worsen unless citizens reassessed their travel habits and responded to proposed policy changes. Lothian Region launched a new strategy titled "moving FORWARD"⁸. For Edinburgh it was proposed that, as shown in Table 1, the percentage of people travelling by car to work should be stabilised between 1991 and 2000 and decline thereafter. The percentage of cyclists was proposed to increase, albeit still at modest levels.

Edinburgh's transport strategy is now being reviewed, partly to take into account more fully the philosophy of sustainable

Table 1 Travel to work in Edinburgh

	1971 Census	1981 results	1991 [9]	2000 Target	2010 [8]
car, m/c	29.1%	38.2%	45.8%	47%	36%
pub.transport	46.5%	41.3%	32.1%	34%	41%
walk	19.9%	16.9%	14.5%	16%	18%
bicycle	0.7%	1.4%	1.8%	3%	5%
other	3.8%	2.2%	5.8%	--	--

transport, the requirements of the Road Traffic Reduction Act for local authorities to set targets for reducing general road traffic, and the experience of changes in transport patterns during the past five years.

4 CYCLE FACILITIES

The Lothian Cycle Project Report¹ presented a 30 year programme of works. Where are we now that we are about halfway through that period?

The report contained proposals for: off-road routes, side and main road routes, safe routes to schools, and a number of longer distance routes.

For off-road routes SPOKES, the Cycle Campaign group for the Lothians, showed what should be done by constructing a 1km length of former rail line during European Road Safety Year, 1986. Both the former Regional Council and Edinburgh District Council subsequently converted more lengths of disused rail line. The former District Council also provided a number of shared-use cycle paths along several rivers and burns as development opportunities arose. That Council's Recreation Department also allowed cyclists to use some paths through parks. SPOKES were involved in other small sections of path upgrading/ construction: along part of the Union Canal, with a group of horse riders in south-west Edinburgh, and with volunteers from Sustrans and elsewhere in north-west and in east Edinburgh. North Edinburgh has the greatest density of these off-road routes as will be seen at the poster presentation. Some of these off-road routes are being incorporated in the longer distance routes, including those which are now part of the Millennium supported National Cycle Network.

The greater part of on-road routes shown in Table 2 refer to bus lanes on radial routes which, in Edinburgh, are also available to cyclists. However there have been some cycle lanes installed on roads without bus lanes, or between lengths

Table 2 Lengths of cycle facilities in Edinburgh

	pre-1983	1988	1993	1998
Off road routes, km	18.5	34.7	58.4	75.2
On-road routes, km	11.1	12.1	16.6	36.7
Routes adjacent to carriageway, km	0.6	3.5	9.4	15.1
All types of route, km	30.2	50.3	84.4	127.0

of bus lane. Only part of the on-road Lothian Cycle Project proposals for South Edinburgh have so far been installed, but as will be seen at the poster presentation, extra facilities have been installed in the same general area and further afield. Many have features which publicise their existence and give cyclists separation and some advantage over general traffic. Matthew Simpson is presenting a paper at this Velo-City on the safety record of these cycle facilities¹⁰.

The Lothian Cycle Project included some proposals on how walking and cycling could be made easier for secondary school pupils. Only a small proportion of these have been implemented in Edinburgh.

Initially, the Cycle Project Report recommendations for neighbourhood traffic calming were not favoured by municipal traffic engineers in Edinburgh. However, in more recent times a considerable number of public requests have been met. Road accidents have reduced in these areas as general traffic is moving at 30 km/h or less; now it is also more pleasant to walk or cycle there.

provisional*

Table 3 Trends in cycle use

		1968	1977	1979	1981	1984	1988	1991	1994	1998*
No.	SPOKES	--	--	283	520	500	560	661	990	1252
members ¹¹										
inbound	cyclists	203	330	--	--	511	618	583	637	719
8-9h										
Scottish	cycling						62	44	50	--
10 ⁶ km./annum ¹²										

5 CHANGES IN CYCLE USE

Table 3 is a series of snapshots for various indicators of cycling. SPOKES is a cyclist campaigning organisation based in Edinburgh and the Lothians. Its membership numbers have increased by approx. 150% over the past 15 years. In contrast, cycling into the city centre in the morning peak has increased by only 40% during the same period. Perhaps SPOKES now contains a greater proportion of leisure cyclists. The volume of cycle travel around Scotland (which happens mostly on classified roads in urban areas) has declined

6 ACKNOWLEDGEMENTS

The Director of City Development, City of Edinburgh Council is thanked for letting me present this paper. Any opinions made are however my own and may not be those of my employing Department, nor of the Council.

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BICYCLE TRAFFIC - TRIALS IN THE CITY OF ZAGREB

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BICYCLE TRAFFIC - TRIALS IN THE CITY OF ZAGREB

In the automobile age, that started in Zagreb in 1960s, the cycling was pushed out and the automobile oriented infrastructure was built without a single bicycle way. In 1990s bicycle network was established but for the moment is both, too short and inappropriately linked. The extension of bicycle track network is under progress but it is going very slowly. The absence of aggressive promotive campaign related to the bicycle traffic is present too. A recent tendency in Zagreb traffic is increasing in the number of cars, decreasing in the public transportation use, more and more congestion and air pollution. Daily travelling by bikes is represented with approximately 1%-2% in total daily travelling during the dry and hot weather.

Idea of bicycling in Zagreb's transportation and particularly idea of transformation of abandoned narrow gauge railway Zagreb-Samobor-Bregana (25 km) into cycle track is going to be presented as well alternative financial sources for that idea.

FAHRRADVERKEHR - VERSUCHE IN DER STADT ZAGREB

Im Zeitalter des Automobils, das in Zagreb in den 60er Jahren begann, wurden die Radfahrer verdrängt, und eine KFZ-orientierte Infrastruktur ohne einen einzigen Radweg wurde gebaut. In den 90er Jahren wurde ein Radwegenetz geschaffen, doch ist dieses derzeit noch zu kurz und unzureichend angebunden. Die Ausweitung des Radwegenetzes ist momentan im Gange, geht jedoch äußerst langsam vor sich. Das Fehlen aggressiver Förderungskampagnen für den Fahrradverkehr ist ein weiterer Faktor, der sich bemerkbar macht.

Gegenwärtig ist der Verkehr in Zagreb durch ein Ansteigen der Anzahl der PKW gekennzeichnet, während gleichzeitig die Benutzung der öffentlichen Verkehrsmittel zurückgeht, das Verkehrschaos sich verschlimmert und die Luftverschmutzung zunimmt. Fahrten mit dem Fahrrad machen in der warmen, trockenen Jahreszeit etwa 1 - 2% der Gesamtfahrten pro Tag aus.

Wir sprechen über die Rolle des Fahrrads im Verkehr Zagrebs, berichten insbesondere auch über die Idee, die aufgelassene Schmalspurbahn Zagreb-Samobor-Bregana (25 km) in einen Radweg zu verwandeln, und beschäftigen uns außerdem mit alternativen Finanzierungsquellen für dieses Projekt.

KOLESARSKI PROMET - POSKUSI V MESTU ZAGREB

V letih avtomobilizma, ki so se pričela v Zagrebu v 60.-ih letih, je bilo kolesarjenje izrinjeno, saj se je gradila avtomobilistično usmerjena infrastruktura z nobeno kolesarsko potjo. V 90.-ih letih je pričela nastajati kolesarska mreža, čeprav je trenutno prekratka in neprimerno povezana. Razširjanje mreže kolesarskih poti je še vedno v razvoju in se le počasi premika. Prisotno je tudi pomanjkanje agresivnih pospešenih kampanj povezanih s kolesarskim prometom. Nedavna težnja zagrebškega prometa se povečuje v številu avtomobilov (zmanjšuje se uporaba javnih prevozov), v prenatrpanosti in onesnaženju zraka. Med suhim in toplim vremenom predstavljajo dnevna potovanja s kolesi približno samo 1 do 2% vseh dnevnih potovanj.

Predstavljena bo ideja kolesarjenja v zagrebškem prevozu, še posebno ideja preoblikovanja ozke, opuščene, preizkušene železniške proge Zagreb-Samobor-Bregana (25 km) v kolesarsko pot, kot tudi alternative finančnih virov za to idejo.

BICYCLE TRAFFIC - TRIALS IN THE CITY OF ZAGREB**1. INTRODUCTION**

Zagreb is the capital of Croatia with a population of approximately 870,000 inhabitants within its administrative borders (640 sq. km). The Zagreb district comprises the City of Zagreb plus surrounding towns and villages and accounts for approximately 1,200,000 inhabitants. Public transport is based on a network of tram, bus and railway lines. In the City of Zagreb motorisation has reached nearly 300 passenger cars per 1,000 inhabitants. Travelling by bike represents only 2% of total daily travelling during dry and hot weather. The present tendency in transport is on increase in the number of passenger cars and a decrease in the use of public transport.

2. STATE OF THE ART IN CYCLING

Cycling has been neglected for a long time. In the automobile age, that started in Zagreb in the 1960s, cycling was pushed out and the automobile-oriented infrastructure was without a single bicycle track. The first serious steps in establishing the cycling network was introduced in the 1990s. It was mainly done by dividing the pavements by yellow lines into pedestrian and cycling lanes, but new streets were constructed with bicycling facilities too. There are 38 km of streets with bicycle lanes, 7 km of bicycle lanes in the recreation zone of Jarun Lake and 5 km of bicycle tracks on the River Sava embankment. These lanes are not sufficiently well connected, so the bicycling network for the moment is both too short and inappropriately linked (fig 1).

The gaps in the existing network are particularly obvious in the central city area and between Zagreb and its surroundings. The central city area is very interesting for cycling with many destinations, but it is a strictly prohibited area for cyclists for safety reasons. Streets are occupied by vehicles, parked cars and pedestrians and for the time being there is no surface that might be easily transformed into cycling lanes.

The Zagreb Master Plan is a basic document on long-term development regarding land use, the infrastructure,

transport and environment protection. The sustainable development philosophy has been accepted in this plan what means wider use of public transport, walking on foot and cycling but restraints in car use too. The future transport network contains 160 km of cycling routes within the city, but there is a lack of cycling routes between Zagreb and its surrounding in that plan. The paragraph on cycling defines that the network should be completed according to circumstances. The plan does not contain a forecast of exactly how important the role of cycling should be in the future.

3. NEW POSSIBILITIES

There are a few possibilities on how to link Zagreb and its surrounding by bike routes. The narrow gauge and single track railway line Zagreb-Samobor-Bregana was abandoned in 1980 because of a lack of passengers. That 25 km railway line from the very heart of Zagreb to the Croatian-Slovenian border was owned by the City of Zagreb (fig. 1). In the Zagreb Physical Plan, that corridor is primarily assigned to new railway construction. The authors do not believe that this plan is realistic, for the same reasons that the former railway was abandoned. Public transportation along the Zagreb-Samobor-Bregana route (Samobor and Bregana account 40,000 inhabitants) has to exist, but by bus, as it has already been organized. Even in the case of such an unbelievable investment, a bike route could easily be transformed back into a railway. The corridor of the former railway comprises a low dike that might, without difficulty, be transformed into a bicycle track. Bicyclists have even used a few short sections in that corridor spontaneously. The minimum that has to be done is to establish an asphalt lane 1.6 m wide on top of the dike. Street and road crossings should be equipped with appropriate traffic signs. This would be enough for the very beginning.

Because of a lack of money in the budget, consideration has been given to of alternative sources of funding. These sources might include the media, recreational facilities, restaurants and pubs along the route. Every participant has to contribute to the idea and benefit from it. One scenario is the following: the media (local newspapers and TV) would be exclusively provided with interesting and current information on the project and, by the way, will describe recreational facilities along the route. There are about 40 pubs and restaurants and even a thermal spa placed very close to the route. Recreational facilities would obtain permission to place their own advertisements free of charge along that route too. Instead of paying for advertisements and newspaper columns, they would contribute to investment into a bicycle lane. The first step in that direction has already been taken by the City Bureau for Development Planning which has interviewed a few journalists in the local media and a few pub owners who have responded positively with regard to their contribution.

The town of Velika Gorica, 6 km away from Zagreb's motorway bypass (fig. 1), has 65,000 inhabitants and its own bike network, but there is no link to Zagreb's bike facilities. Zagreb and Velika Gorica are linked by a well equipped dual carriageway (State Road 30). Fortunately, the road was built on land 10 m wider than was necessary for motorised traffic. The strip of surplus land alongside the road might be used for a bike track. That route could be easily linked from the motorway bypass north to the city centre by sharing the present pedestrian footpaths with bikers. As regards financial sources, the scenario for the abandoned railway corridor could not be implemented here because of the lack of recreational facilities along this route. This project might be financed from the budget, but if not, an alternative source should be found.

4. PRIORITIES

Preparing this paper and being faced with local circumstances (the private car has become a matter of prestige, motorisation is rising above real income and contrary to that, the bike is increasingly developing a poor image) we have become aware that the priority in establishing bicycling as a significant mode of transport is not so much infrastructure, but a way of thinking. After a long period of communism, people are "thirsty" for private cars, politicians do not like to oppose them, and there are more and more cars in the city which lead to the degradation of the quality of life and the devastation of the natural and cultural heritage.

In these circumstances, the voice of the environment protection movement and a small group of experts has no real echo. It seems that only a total gridlock might initiate a change in the way of thinking. We are afraid that the technicians who have been dealing with cycling so far are not able to influence present trends. Perhaps a sophisticated psychological approach could help – a long-term campaign supported by popular politicians, the media and even tax benefits for cyclists and so on? This process seems to be something entirely different from what technicians have so far been doing.

4. CONCLUSION

Bicycle riding in Zagreb needs measures to push it ahead, in the sense of infrastructure, but even more in a social meaning. A bicycle network has to be spread out while in the central city area it is necessary to seriously redesign the street surfaces to allow for bicycle facilities. There are a few convenient possibilities to realise links between Zagreb's built-up area and the surroundings. These include the abandoned Zagreb-Samobor-Bregana railway, and the unused land alongside the State Road 30 Zagreb-Velika Gorica.

But with the present tremendous tide of motorisation and the low status of cycling, the most important problem is how to change ways of thinking, to make cycling more popular and to convince car drivers to use a bicycle instead of a car.

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STRATEGIES TO PROMOTE URBAN CYCLE TRAFFIC (I)

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BICYCLE NETWORK IN BRATISLAVA SURROUNDING

At present alternative transport modes are used for leisure trips to destinations at short or long distances. It is particularly the bicycling that have very good prospects. In West-Slovakian region the international bicycle route leading from Austria passing through the capital Bratislava to Hungary is of great attraction. It runs along the Danube and is linked to junctions of the water, rail and road transport located on the route Austria - Bratislava - Komarno - Sturovo - Hungary. It uses the surface of the Danube dams, which enhances its attraction and offers a gamut of opportunities for short-term as well as long-term recreation. The route is linked to mountain bicycle routes in the Carpathians, in the wetlands along the Danube, and it leads through the recreation centre emerging at the Danube dam in the near hinterland of Bratislava. The contribution dealt with the new development in the realized and planned bicycle network and infrastructure in this unique central Danubian territory.

RADWEGENETZ IN DER UMGEBUNG VON BRATISLAVA

Gegenwärtig werden alternative Verkehrsmittel für Freizeitfahrten sowohl zu nahen als auch zu weit entfernt gelegenen Bestimmungsorten genutzt. Besonders gute Aussichten bestehen insbesondere für das Radfahren. Im Westen der Slowakei ist der internationale Radweg, der von Österreich kommend durch die Hauptstadt Bratislava nach Ungarn führt, ein wichtiger Anziehungspunkt. Er verläuft entlang der Donau und ist an die entlang der Strecke Österreich - Bratislava - Komarno - Sturovo - Ungarn gelegenen Kreuzungspunkte zwischen dem Wasser-, dem Schienen- und dem Straßenverkehr angebunden. Der Radweg verläuft entlang der Oberfläche der Donaudämme, was seine Attraktivität

steigert, und bietet eine Vielfalt von Möglichkeiten sowohl für kurze als auch für lange Erholungsausflüge. Die Route ist an Bergradstrecken in den Karpaten sowie an Radwege in den Feuchtgebieten entlang der Donau angebunden und führt durch das am Donaueck im nahen Hinterland Bratislavas entstehende Erholungsgebiet. Das Referat beschäftigt sich mit neuen Entwicklungen bezüglich des bereits bestehenden und des geplanten Radwegenetzes und mit der Infrastruktur in diesem einzigartigen donauanahen Gebiet.

KOLESARSKO OMREŽJE V OKOLICI BRATISLAVE

Trenutno se alternativna transportna sredstva uporabljajo pri prostočasnih izletih krajše ali daljše oddaljenosti. Posebno kolesarjenje ima pri tem zelo dobre obeti. V Zahodno-Slovaški regiji je zelo atraktivna mednarodna kolesarska pot, ki vodi iz Avstrije, skozi glavno mesto Bratislava na Madžarsko. Pot teče ob reki Donavi in je z vodnimi jezovi, železnico in cestnim prometom povezana; nahaja se na poti Avstrija- Bratislava- Komarno- Sturovo- Madžarska. Poteka po nasipih, jezovih reke Donave, kar še poveča njeno privlačnost in ponuja obsežne možnosti za kratkotrajno, kot tudi dolgotrajno rekreacijo. Pot je povezana z gorskimi kolesarskimi potmi v Karpatih, z vlažnimi območji ob reki Donavi ter pelje skozi rekreacijski center, ki se pojavi ob donavskem jezui v bližnjem zaledju Bratislave. Prispevek obravnava novi razvoj

CYCLING NETWORK IN THE BRATISLAVA SURROUNDING

During the last decade bicycle transportation has developed rapidly in the Central European countries. The main motive for this is not only the utilisation of the bicycle for leisure time activities, but also the deterioration of the formerly main means of transport - mass transit. More than 60 percent of the inhabitants of Slovakia own a bicycle, but the cycling network and infrastructure is very poorly developed.

The best conditions for cycling are in the towns situated on the plain in the western Slovakian region around the Danube River. In this region, the international bicycle route beginning in the Austria and passing through the Slovak capital of Bratislava to Hungary is very attractive. It runs along both banks of the Danube River and is linked to water, road and rail transport connections located on the Austria - Bratislava - Komarno - Sturovo - Hungary route. It uses the surface of the Danube dams, which enhances its attractiveness and offers a wealth of opportunities for short-term as well as long-term recreation. The Danube international bicycle route is connected to the bicycle network in Bratislava and linked to mountain bicycle routes in the Carpathians as well as in the wetlands along the Danube and Morava Rivers.

The new situation on the Danube River after the construction of the Gabčíkovo waterworks has allowed for use of the surrounding area and provide very good water conditions for recreational activities. There are new recreational infrastructure areas planned on both sides of the Danube River for around 80,000 daily visitors present in this region. A new recreational complex "Danubium" with extending 237 hectares is planned for the right downstream bank of the Danube near the Bratislava suburb of Petržalka. The docks for small recreational and sport vessels, yachting clubs, autocamping and caravanning, an aquapark, a "Via Danubiana" gallery, water sport facilities and a geothermal health resort are planned for this complex. The whole complex has been designed for around 10,000 daily visitors. Presently, there is a "wild-water" canal which opened in 1997 for water sports in this complex, which fulfils world championship conditions.

The bicycle route on the left Danube bank is well connected to the existing municipal infrastructure, e.g., to the city of Bratislava and other towns bordering on the Danube from the hinterland. Thanks to the flat terrain and the dense and good quality road network with low traffic loads, cyclists can utilise the local and rural roads. During the previous period in 1996, a project under the PHARE program was developed in this area. This area is part of West-Slovakian region, which has a high potential and attractiveness for the development of cycling.

The poster includes a scheme of the present and planned state of the cycling network and infrastructure and their photographic documentation as well as selected parts of the "Danubium" leisure and sports complex feasibility study.

THE „MOBILE“ PROJECT

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ENGLISH

THE „MOBILE“ PROJECT

The European Union is funding an environmental programme launched by the City of Linz which offers an opportunity to test new forms of mobility. In addition to car sharing and an information campaign to promote public transport, the Traffic Department offers, as another focal point of the programme, measures to increase the share of cycling in overall traffic. To promote shopping by bike a campaign was launched in co-operation with grocery stores where people were offered an opportunity to use shopping bikes and trailers free of charge for a certain period of time. The master class of the Art Academy of Linz organised a competition to improve the image of the bicycle as an everyday means of transport, participants being invited to submit proposals for a functional work of art serving as a bicycle parking facility. The award-winning structure will be erected in the centre of the city on a surface previously used as a parking lot.

DEUTSCH

DAS PROJEKT MOBILE

Die Europäische Union fördert ein Umweltprogramm der Stadt Linz, welches das Ausprobieren neuer Mobilitätsformen anbietet. Neben Car-Sharing und einer Infokampagne für den ÖV bietet das Verkehrsressort als Schwerpunkt Maßnahmen zur Steigerung des Radverkehrsanteils an. Um das Fahrrad für den Einkaufsverkehr zu bewerben, wurden in Kooperation mit Lebensmittelmärkten Aktionstage durchgeführt. Einkaufsräder und Anhänger wurden dort gratis für einen bestimmten Zeitraum verliehen. Zur Imagesteigerung des Fahrrades als Alltagsverkehrsmittel wurde von der Meisterklasse der Linzer Kunsthochschule ein Wettbewerb zur Entwicklung eines funktionalen Kunstwerkes als Radabstellanlage durchgeführt. Errichtet wird das Siegermodell im Innenstadtbereich auf einer Fläche, die bis dahin Autoparkplatz war.

Im Rahmen einer Bürgerbefragung bzw. Beteiligung wurde schließlich das neue Radverkehrskonzept der Stadt begutachtet und versucht, es auf die Bedürfnisse der Benutzer anzupassen.

SLOVENSKO

PROJEKT MOBILE

Evropska unija podpira ekološki program mesta Linz, ki ponuja preizkušnjo novih oblik mobilnosti. Razen Car-Sharing in informacijske kampanje za ÖV, ponuja resor za promet ukrepe za stopnjevanje deleža kolesarskega prometa. V sodelovanju s trgovskimi centri smo izvedli akcijo za reklamiranje koles za nakupovalni promet. Za določen čas smo zastoj izposojali kolesa in prikolice za nakupovanje. Na Visoki šoli za umetnost je bilo izvršeno tekmovanje za razvoj funkcionalne umetnine - stojala za kolo. Zmagovalni model bo postavljen v središču mesta, kjer je bilo prej parkirišče za avtomobile. Namen tekmovanja je bil dvig slike kolesa kot prevoznega sredstva za vsak dan.

V okviru ankete izvršene med prebivalstvom smo razmislili o novem konceptu kolesarskega prometa, kjer smo se poskušali prilagoditi potrebam uporabnikov.

Posebej koncipirano urjenje kolesarjev v Linških šolah, naj bi nadomestilo dosedanje urjenje v razredih z urjenjem v prometni realnosti.

WEDNESDAY

MOBILE

Innovatives Mobilitätsdesign zur Steigerung der Lebens- und Umweltqualität einer europäischen Mittelstadt
(Projektlaufzeit 1997-2000)

Ein Projekt des Verkehrsressorts der Stadt Linz, Stadtrat Berthold Amerstorfer. Konzept und Projektmanagement
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Im Rahmen des von der Europäischen Union geförderten Umweltprogrammes der Stadt Linz zur Hebung der Akzeptanz
alternativer Mobilitätsformen wurde neben einer Schnupperphase für Car-Sharing und einer Infokampagne für den ÖV
einiges zum Thema Fahrrad geboten.

Wie eine dem Projekt vorausgegangene Studie gezeigt hat, wird in Linz noch immer jede vierte Besorgung im Umkreis
von 500 Metern mit dem Auto erledigt. Um hier eine Bewußtseinsbildung im Bereich des Einkaufsverkehrs und das
Umsteigen auf umweltverträgliche Verkehrsmittel wie z.B. das Fahrrad zu erreichen, müssen Anreize zum Testen und
Ausprobieren des alternativen Warentransportes angeboten werden. Dazu gab es Gratis - Testaktionen gemeinsam mit
großen Lebensmittelmärkten, bei denen sich die LinzerInnen das für ihre Bedürfnisse passende Fahrrad (speziell
entwickelte Einkaufsfahrräder) oder Anhänger ausleihen konnten. Das große Interesse der Linzer Bevölkerung an diesen
Aktionen führte zu einer dauerhaften Installierung eines Verleihservices im Neuen Rathaus ab Frühling 1999. Ergänzt
wird der Verleih durch Kinderanhänger. Der Verleih von Radanhängern zum Lastentransport wird vom Verkehrsressort
aus weiter gratis betrieben.

Zur Imagesteigerung des Fahrrades als Alltagsverkehrsmittel entwarf die Meisterklasse für Metall der Linzer
Kunsthochschule eine Radabstellanlage als funktionales Kunstwerk. Errichtet wird diese im Innenstadtbereich auf einer
Fläche, die bis dahin Autos als Parkplatz zur Verfügung stand..

1997 und 1998 gab es verschiedene Foren, um die Linzer Bevölkerung aktiv an der Entwicklung und Beurteilung von
Bewegungsräumen für RadfahrerInnen zu beteiligen. Das Radverkehrskonzept der Stadt wurde mit Hilfe einer
Bürgerbefragung begutachtet. Mit den von den Nutzern eingebrachten Beiträgen soll der Linzer Radverkehr eine
Anbindung an die verschiedenen Lebensbereiche erfahren. Es zeigte sich, daß der Vorrang Qualitätsverbesserungen des
bestehenden Netzes vor einer Erweiterung zu geben ist. Maßnahmen wie die Neugestaltung von Bodenmarkierungen an
neuralgischen Punkten, Schaffung eines Leitsystems für Radfahrer sowie die Installierung einer weiteren
fahrradgesteuerten Lichtsignalanlage wurden gesetzt.

Radfahrtraining im Straßenverkehr soll in Linzer Schulen die bisherigen Übungen im Schonraum ersetzen. Lehrer
nahmen dazu an einem Seminar teil, das ihnen die Wichtigkeit des Trainings im realen Verkehrsgeschehen aufzeigt.

RESBI : EXPERIMENTAL RESEARCH ON BICYCLIST'S BEHAVIOUR AND STRATEGIES IN URBAN TRAFFIC

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RESBI : EXPERIMENTAL RESEARCH ON BICYCLIST'S BEHAVIOUR AND STRATEGIES IN URBAN TRAFFIC SUMMARY :

Means for understanding the specific behaviour and strategies adopted by cyclists in urban traffic. INRETS has
undertaken research in the framework of the French " ECO-MOBILITY " project, using an experimental device, which
enables the parameters traditionally employed in studies on motorist's behaviour to be observed and recorded on a
bicycle.

A City-bicycle has been equipped with four miniaturised video cameras, a mixer -in order to have the four pictures on
the same medium with the same time base - and a videotape recorder. One camera films the cyclist's face, the second
the view of the road in front, the third the view of the road behind and the fourth the speedometer. The experiment was
carried out in 1998, with volunteer cyclists on their usual daily trips.

RESBI: EXPERIMENTELLE FORSCHUNG ZU VERHALTEN UND STRATEGIEN VON RADFAHRERN IM STÄDTISCHEN VERKEHR

Methoden, die es uns erlauben, das spezifische Verhalten und die Strategien der Radfahrer im städtischen Verkehr zu verstehen.

INRETS hat im Rahmen des französischen Projekts ECO-MOBILITY unter Verwendung eines experimentellen Geräts, das die Beobachtung und Aufzeichnung der bei Studien zum Verhalten der Autofahrer normalerweise verwendeten Parameter auch bei Radfahrern erlaubt, Untersuchungen durchgeführt.

Ein City-Bike wurde mit vier Mini-Videokameras, einer Mischanlage - um die vier Bilder auf derselben zeitlichen Grundlage auf demselben Medium zu erhalten - und einem Videorecorder ausgestattet. Eine Kamera filmt das Gesicht des Radfahrers, die zweite die Straße vor dem Radfahrer, die dritte die Straße hinter dem Radfahrer und die vierte den Tachometer. Das Experiment wurde 1998 durchgeführt, wobei freiwillige Radfahrer auf ihren normalen täglichen Fahrten beobachtet wurden.

RESBI : POSKUSNA RAZISKAVA OBNAŠANJA KOLESARJA IN STRATEGIJE V URBANEM PROMETU

Povzetek obravnava načine za razumevanje specifičnega obnašanja in sprejete kolesarske strategije v urbanem prometu. INRETS je prevzel raziskavo v okviru francoskega projekta "ECO-MOBILITY", uporabljajoč raziskovalni načrt, ki omogoča tradicionalno uporabljene parametre pri obnašanju motorista in jih opazuje ter beleži na kolesu.

Mestno kolo je bilo opremljeno s štirimi miniaturnimi videokamerami, z mešalcem (tako da so vse štiri slike v isti sredini, z isto časovno osnovo) in videorekorder. Ena kamera snema kolesarjev obraz, druga pogled s ceste naprej, tretja pogled s ceste nazaj in četrta merilec hitrosti. Raziskava je bila izpeljana leta 1998 in to s pomočjo prostovoljnih kolesarjev na njihovi vsakdanji poti.

RESBI : EXPERIMENTAL RESEARCH ON BICYCLIST'S BEHAVIOUR AND STRATEGIES IN URBAN TRAFFIC

J.J. DENIS, J.R. CARRÉ, C. GERMAIN, N. NOËL

1. INTRODUCTION

Cyclists' behaviour has been studied for different reasons : for defining norms, for analysing interactions between road users (conflicts) and for assessing the effects of infrastructures. Various techniques can be employed for observing behaviour. An observer in situ, using special forms, can record the manoeuvres made by cyclists; different types of behaviour can be more-or-less precisely pre-coded. Observations can also be made by means of a video camera set up at an intersection or along a straight piece of road, or by means of a video-maker following the cyclists in traffic. The behaviour recorded on video is subsequently coded.

Contrary to observation in situ by a researcher, the use of video facilitates the detailed study of cyclists' movements. It enables complex events to be recorded in full detail, and several simultaneous phenomena to be studied. Research on behaviour by video alone is not sufficient however. The description it provides does not necessarily lead to an understanding of the reasons underlying behaviour, nor does it give a clear picture of the reading the user makes of special infrastructures designed for cyclists and their judgements as to their relevance. Video studies are frequently supplemented with interviews of the cyclists involved in the study.

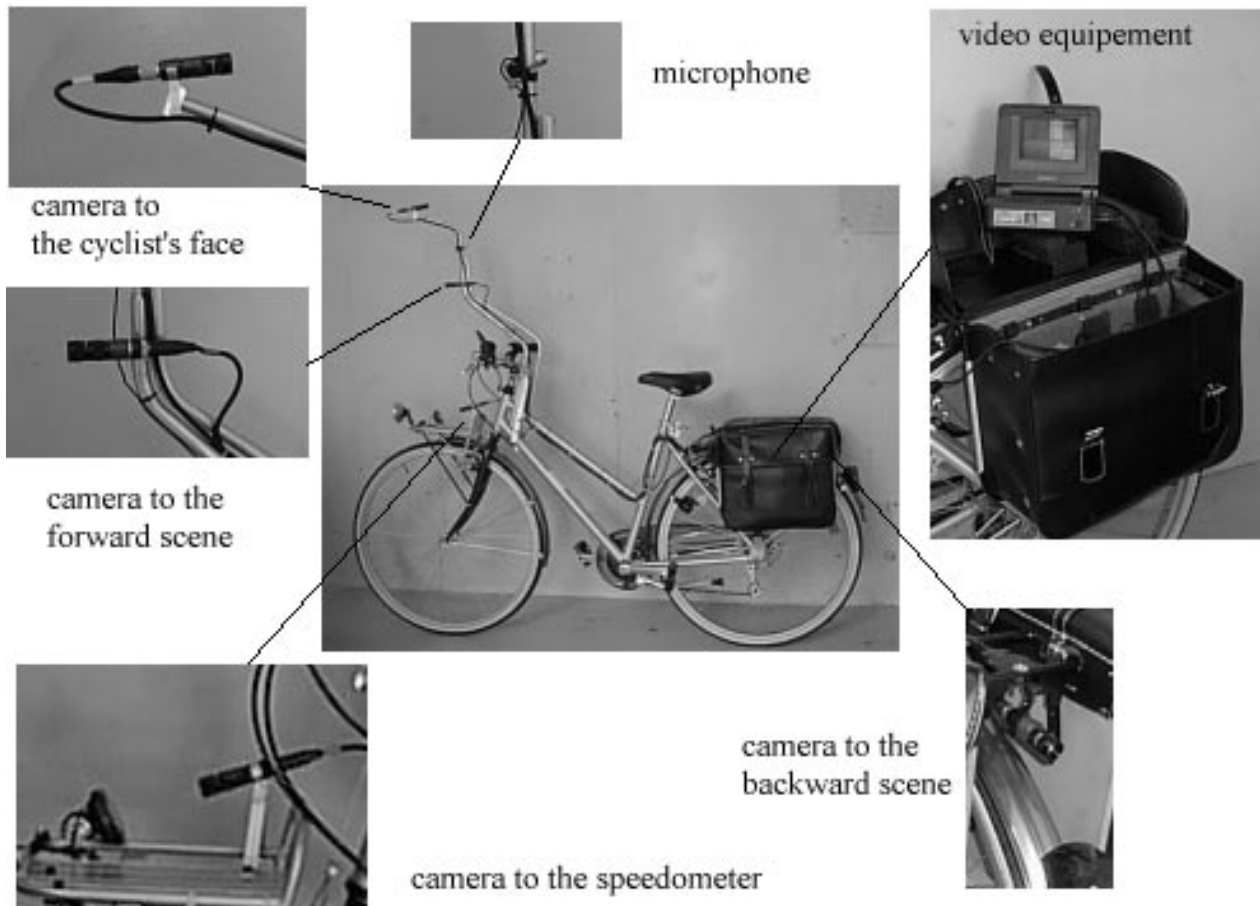
What are the reasons for cyclists' behaviour? What is the relationship between cyclists' behaviour and the infrastructures in which they are travelling? How efficient are specially designed mechanisms in terms of their safety? The answers to these questions would enable a better knowledge base to be set up, promoting the bicycle, and benefit road network design and the creation of specially designed infrastructures.

In the light of the present situation, one question immediately comes to mind: how can one give an account of the time slicing and strategies adopted by the cyclist? It is not possible to follow him in a car or on a bicycle. It is therefore necessary to equip a bicycle with tools enabling the sequence of events to be shown afterwards in the presence of the person. We therefore propose combining techniques used for analysing trips made on foot with those used to study the behaviour of motor vehicle drivers.

2. EQUIPMENT

A feasibility study on equipping a bicycle with instruments has been carried out. The instrumentation is designed to collect two sorts of data: video recordings and physical or physiological measurements, characterising the behaviour of the cyclist or the bicycle.

A town bicycle has been equipped with four miniaturised video cameras, a mixer, in order to have the four pictures on the same medium with the same time base, and a videotape recorder. One camera films the cyclist's face, the second the view of the road in front, the third the view of the road behind and the fourth the speedometer. The bicycle has also been equipped with a microphone, which records on the video sound track the comments made by the cyclist. The photograph below presents the various elements of the device, which weighs no more than 6 kilogrammes.



3. DATA

COLLECTION

The basic principle is to gather data during journeys made in real-life situations, in fact amounting to a veritable analysis of the activities of the cyclist in real-life situations, without interference due to the presence of an escort or a follower car.

Thirty subjects are recruited following a study of the journeys they habitually make and of their experience of bicycling in an urban environment

As regards the analyses, three types of data are taken into account :

- 1 - the computable data recorded : speed at any moment, distance covered, time, the environment in which the cyclist is travelling (type of road, sign-posting, state of the road, traffic density, etc...), the cyclist's course of action and the information gathered by visual observation.
- 2 - the verbal and visual data recorded (video), which provide clarification of an event (conflict) or a manoeuvre (left turn or feet on the ground) and enable a sequence in the urban road space (intersection) to be located.
- 3 - the comments made during the interviews organised before the journey and afterwards, when the sequence of the cyclist's journey is played back, will provide a better understanding of what bicycle travel really is; the constraints and the difficulties encountered; the influence of infrastructure on strategy; the reasons for and the circumstances in which cyclists will take risks.

The first step in the data processing is to break down the video tapes. The film is viewed and the cyclists' behaviour and the characteristics of the environment through which he/she travelled recorded on computer and linked to a time code.

4. RESULTS

The data collected from the sample of 30 cyclists have not been completely processed. Here after is given an example of the results obtained on a 31 minutes trip over a distance of less than 9 kilometers.

The average speed was 18 km/hr, i.e. twice the speed of a bus running in Paris. The overall stops lasted 2 minutes. Traffic was flowing freely during 68% of the trip duration, it was heavy during 22% and blocked during 8% of the time. The cyclist has passed 39 junctions, out of them 17 had no traffic lights, 15 were passed at green and 7 at red. Gazes were distributed as follows : 45 % of them on the left, 37 % on the right, 13 % behind and left and 4 % behind and right. These types of gazes were mainly recorded at junctions. Out of the 24 manoeuvres judged, by the cyclist, as delicate in terms of safety, 20 % consisted in overtaking a stream of cars on the right and 46 % were originated by a fixed or a mobile obstacle (roadworks, pedestrians, car or bus coming to a stop).

The comparison of the other data has, to date, made it possible to interpret the organisation of the journeys and the strategies adopted by cyclists in traffic. Our initial observations have revealed that cyclists seek, to varying degrees, a certain efficiency in their travel, by limiting the number of stops they make to a minimum. In addition, the most complex tasks for cyclists occur when crossing intersections, where they must simultaneously take in visual information and carry out different manoeuvres (ride up a line of cars, make a turn).

We have been able to observe in more detail that cyclists adopt different methods for riding up a line of vehicles. Furthermore, in narrow streets, they tend to occupy the space of a car, in order to avoid being caught between a moving vehicle and parked cars. They do not very often look behind when they are being overtaken by a car or when they swerve, which constitutes a risk for the cyclist. It should be asked at this stage if the cyclist does not take into account what is happening behind him by listening to traffic noise. We have also been able to note that cyclists travelling in a dense urban environment (such as the centre of Paris) are required to avoid more obstacles (vehicles double parked, vehicles manoeuvring, stationary buses) than cyclists travelling in the outskirts.

The preliminary results make it possible to envisage establishing a relationship between the different strategies adopted by the subjects and the characteristics of the journeys. It should be possible to construct a typology of cyclists, of greater relevance to the planner and a better guide for determining the safety measures which need to be taken (e.g. the fast, experienced cyclist who rides only on the road and prefers to use a direct itinerary, or the slow cyclist who attempts to avoid confrontation with motor vehicles and who uses both the footpath and the road...).

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SYSTEMATIC SECURING OF CYCLISTS AT INTERSECTIONS

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SYSTEMATIC SECURING OF CYCLISTS AT INTERSECTIONS

The Erftkreis (430.000 inhabitants), an administrative district with 10 medium and small cities, started the programme "Securing Cyclists at Intersections". This includes so far:

- systematization of the different way of securing and lay-out of intersections for bicycle traffic,
- methodical workout of planning- and lay-out criteria for bicycle-optimized ways of crossing roads and of elements to secure cyclists at intersections,
- organisation of the international congress "Securing Cyclists at Intersections" (130 participants from 5 countries) and discussion of the results with international planners for bicycle traffic and
- detailed planning and realization of about 40 cyclist-friendly intersections.

Following planning- and lay-out criteria should be considered when cyclist-friendly intersections are planned:

- The choice of the placement of the intersection should be seen in connection with the urban context.
- Shape and size of the intersection should be accounted in dependance of the typical ideal way and the dynamic of the cyclist, to make a comfortable and direkt turning possible. Signalized intersections should be avoided when possible.
- All intersections should be designed clear and open. All means should be considered not only in terms of traffic-plannig but also in terms of townshape.
- All possible ways for cyclists at intersections should be taken into account, regarding the shape planning of the intersection.
- As a matter of fact also the needs of pedestrians should be considered.
- To ensure good recognition of the intersections, which helps to develop the same behavior pat-terns for all road-user, all intersections within the Erftkreis are designed in a uniform shape.

In summary the Erftkreis is one of the first administrative districts which presents a worked out strategy for securing intersections within the network of bicycle tracks and has exemplary character in planning safe intersections for cyclists.

SISTEMATISCHE SICHERUNG VON QUERUNGSSTELLE FÜR DEN FAHRRADVERKEHR

Der Erftkreis (430.000 Einwohner), ein Zusammenschluß von zehn Mittel- und Kleinstädten, hat das Programm "Sicherung von Querungsstellen für den Fahrradverkehr" ins Leben gerufen. Dies umfaßt bisher folgende

Einzelkomponenten:

- Systematisierung der unterschiedlichen Ausprägungen und Sicherungsformen von Querungsstellen für den Fahrradverkehr,
- methodische Erarbeitung von Planungs- und Gestaltungskriterien für radverkehrsoptimierte Querungsformen und Netzelemente zur Sicherung der Radfahrer an Querungsstellen,
- Organisation des internationalen Kongresses "Sicherung von Querungsstellen für den Fahrradverkehr" (130 Teilnehmer aus fünf Ländern) und Diskussion dieser Arbeiten durch internationale Radverkehrsplaner,
- detaillierte Planung und Realisierung von ca. 40 fahrradfreundlich gestalteten Querungsstellen für den Fahrradverkehr.

Folgenden Planungs- und Gestaltungskriterien sollten daher bei der Konzeption von Querungsstellen für den Fahrradverkehr berücksichtigt werden:

- Die kleinräumliche Standortwahl der Querungsstellen muß unter Berücksichtigung des nutzungsbedingten und städtebaulichen Kontextes erfolgen.
- Sowohl die Gestaltung als auch die Dimensionierung der Querungsstellen muß in Anlehnung an die direkte, idealtypische Fahrlinie und die Fahrdynamik der Radfahrer geschehen, so daß für Radfahrer ein komfortables und direktes Abbiegen ermöglicht wird. Auf eine Sicherung mittels Lichtsignalanlagen sollte weitgehend verzichtet werden.
- Alle Querungsstellen sind eindeutig und übersichtlich auszuprägen. Neben verkehrstechnischen Aspekten sollte durch diese Maßnahmen ebenfalls ein Beitrag zur Straßenraumgestaltung geleistet werden.
- Alle potentiellen Fahrtströme der Radfahrer müssen in die Gestaltung der Querungsstellen einbezogen werden.
- Zwangsläufig bedürfen neben Aspekten der Radfahrer auch die Anforderungen von Fußgängern ausreichend Berücksichtigung.
- Um eine schnelle Wiedererkennbarkeit der Querungsstellen zu gewährleisten und um allen Verkehrsteilnehmern gleiche Verhaltensmuster naheulegen, erhalten alle Querungsstellen im Erftkreis eine einheitliche Gestaltung und Kennzeichnung.

Damit hat der Erftkreis eine Vorreiterrolle zur Sicherung dieser sehr konflikträchtigen Streckenabschnitte innerhalb der Radverkehrsnetze übernommen und besitzt eine Vorbildfunktion zur Sicherung der Querungsstellen für Radfahrer.

SYSTEMATIC SECURING OF CYCLISTS AT INTERSECTIONS

Within the network of bicycle lanes and tracks, cyclists are often forced to cross the driveways. Aside from the classical intersection, where the driveway crosses the cycle lanes perpendicularly, crossing is necessary for cyclists in many other cases, e.g.:

- at connections from one way bicycle lanes on each side of the street to one two way bicycle lane on one side of the street, and
- at the entrance of towns where a two way bicycle lane on one side of the road leads onto the street.

Other critical points of the bicycle lane network are the beginnings and endings of bicycle lanes, as have considerable effect on safety and comfort of the cyclists. In fact these elements influence both the objective and the subjective safety on the road much more than the other parts of the bicycle lanes.

Although it is known from long-term studies that many accidents with cyclists occur at intersections or while turning onto the driveways, this topic still is badly neglected within the widespread discussion of bicycle promotion.

Considering this the Erftkreis (430.000 inhabitants), an administrative district with 10 medium to small cities and member of the association „Fahradfreundliche Städte und Gemeinden in Nordrhein-Westfalen“, started the programme „Securing Cyclists at Intersections“.

1. POSSIBILITIES OF TRAFFIC REGULATION TO IMPROVE CROSSING OF ROADS FOR CYCLISTS

Usually a perpendicular crossing of the driveway is poorly accepted by cyclists, because it takes more time to stop at the intersection and start again to cross it, than to turn off directly (fig. 1). Also the speed difference of cars and bicycles and the waiting period for a proper space are smaller in the case of direct turning. A disadvantage of direct crossing is the longer period of time, the cyclist spends on the driveway.

A+B = travelled distance in 2,5 seconds (based on a bicycle-power of 100 W)

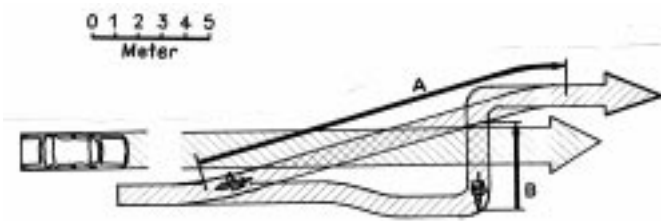


fig. 1: comparison of both ways of crossing, ref.: Straßen zum Radfahren; Verkehrsclub Österreich, 1995.

An important element in designing intersections is the distance from which the crossing point and approaching traffic can be seen by the cyclist. The time, a cyclist needs to visualise and to react on

a certain situation should also be considered in the plan.

2. REQUIREMENTS ON INTERSECTIONS

In the future designing of intersections for bicycle traffic demands the fulfillment of several criteria:

- At all beginnings and endings of bicycle lanes a safe and comfortable connection to the car traffic should be ensured.
- At intersections, where cyclists do not have priority, a direct crossing via the ideal driving line should be favoured.
- The design of the intersection should fit into the functional and urban planning concept.
- All crossing points should show similar ways of crossing to avoid conflicts between the different traffic participants.

Following this specification two main tasks to secure bicycle traffic have to be worked out in the Erftkreis:

1. Fundamental planning criteria for the emplacement and the design of bicycle crossings have to be chosen.
2. All intersections in the Erftkreis should have an uniform shape, which helps to develop the an identical behaviour patterns for all road-users.

3. PLANNING ELEMENTS FOR DIRECT CROSSING OF THE DRIVEWAY

The securing of intersections must take into consideration the driving dynamic of a cyclist. The following methods are very

important in bicycle traffic planning:

3.1 Rear cover

Today rear cover is commonly used in Germany. Unfortunately the more endangered left turning cyclist is less protected than the cyclist joining from the right. In this case an own left turning lane for cyclists reduces the danger considerably.

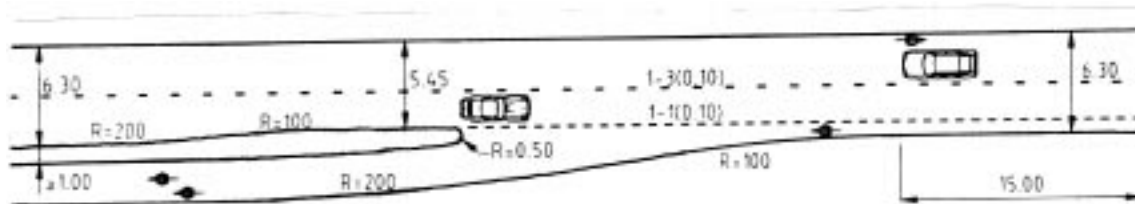


fig. 2: Rear cover at the end of a

bicycle lane; ref.: Radverkehrsplanung von A-Z, 1994.

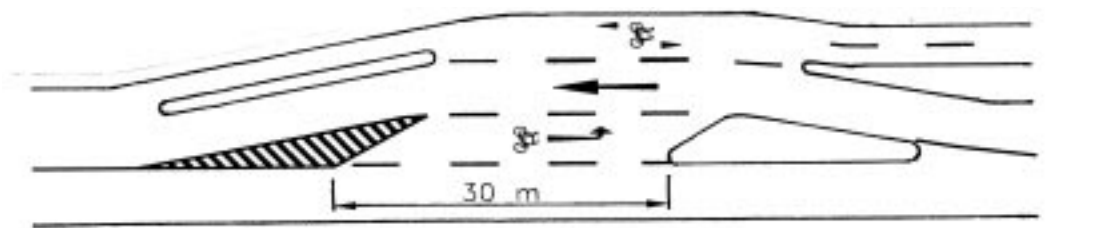


fig. 3: Beginning of a two-way-bicycle lane with left-turning lane for cyclists; ref.: Straßen zum Radfahren, Verkehrsclub Österreich, 1995.

3.2 „Left bicycle paths”

With the ending of a bicycle path on the left side, the bicycle traffic not only needs to be integrated into the car traffic, the cyclist also has to cross two driving lanes. In such cases the following securing methods are favoured (intersection with narrowing of the road or island respectively):

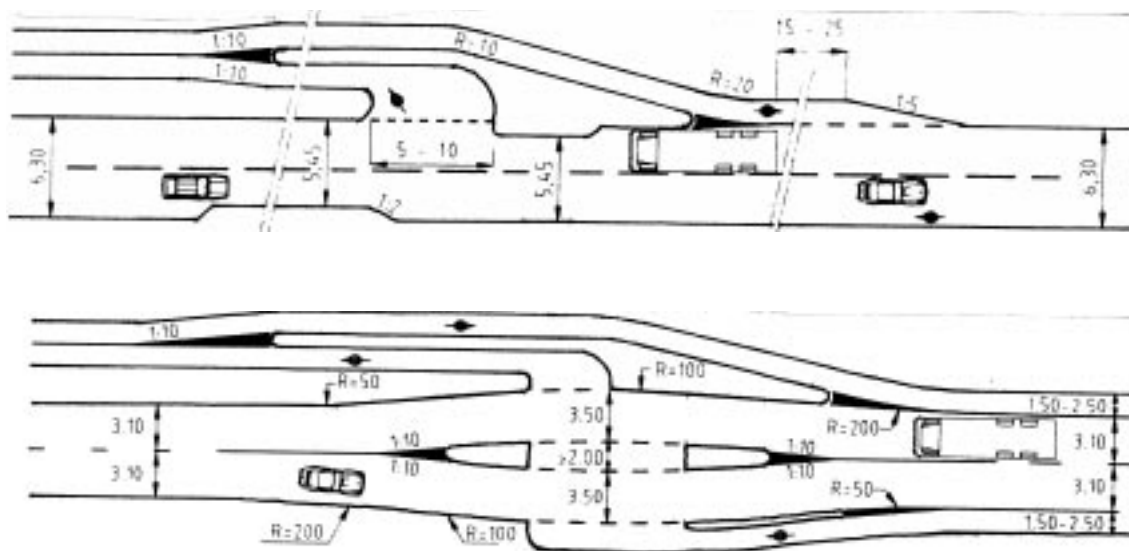


fig. 4: Securing of the ending of a bicycle path with and without island, ref.: Radverkehrsplanung von A-Z, 1994.

In the district of Zürich (Switzerland) protecting space at the right side of the street is provided. Cyclists, who do not have enough time to cross because of an approaching car, have the possibility to wait at the right side and then cross indirectly.

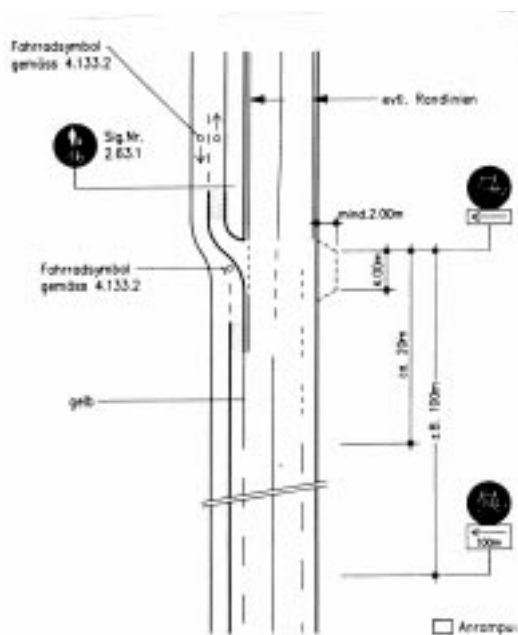


fig. 5: Crossing at the beginning or ending of a bicycle track, ref.: Radverkehrsanlagen, Kantonspolizei Zürich.

4. PLANNING AND DESIGN RECOMMENDATIONS

The following planning and design criteria should be considered for planning of cyclist supporting intersections:

- The choice of the placement of the intersection should be seen in connection with the urban context.
- Shape and size of the intersection should be accounted in dependance of the typical ideal way and the dynamic of the cyclist, to make a comfortable and direkt turning possible. Signalized intersections should be avoided when possible.
- All intersections should be designed clear and open. All means should be considered not only in terms of traffic-planning but also in terms of townshape.
- All possible ways for cyclists at intersections should be taken into account, regarding the shape planning of the intersection.
- As a matter of fact also the needs of pedestrians should be considered.
- To ensure good recognition of the intersections, which helps to develop the same behavior patterns for all road-user, all intersections within the Erftkreis are designed in a uniform shape.

5. PLANNING AND DESIGN EXAMPLES

Considering these requirements 25 intersections were planned within the programme „Securing cyclists at Intersections”, to provide safe crossing for cyclists at the beginning and ending of bicycle tracks. During this work following points became clear:

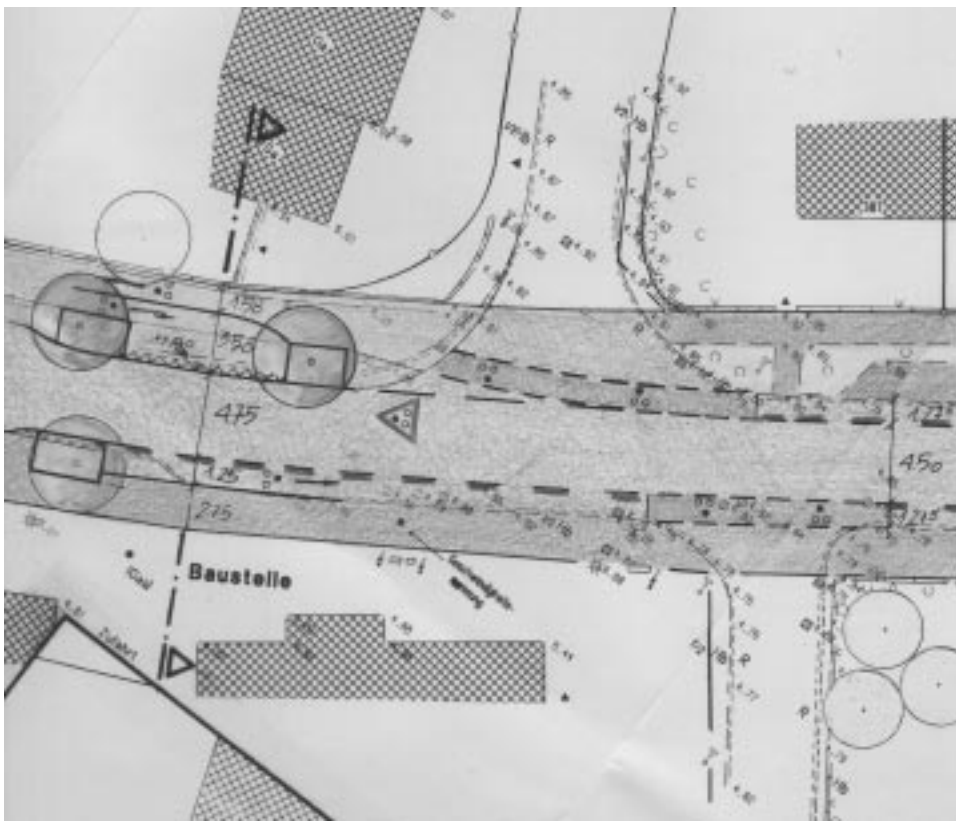
- Each situation is different and has to be checked individually
- Optimised elements have to be fitted to their individual surrounding
- Every planning detail is crucial for a secure and cyclist-friendly design, resulting in a broad acceptance of the crossing.

On the following pages some examples for safe intersections are depicted.

5.1 Crossing points on the road

Good elements for the protection of bicycle traffic on straight streets are narrow parts or islands on the driveway.

NARROWING



In this example bicycle traffic runs on a two-way bicycle track outside the city. In the

city no bicycle track exists, so protecting lines are marked on both sides of the street. The bicycle crossing is introduced by a narrowing of the street to 4,75 m. Through a 10 m long protecting area, diagonal crossing is made possible for bicycle traffic. The protecting line starts immediately behind the narrowing and provides a rear cover for the cyclists.

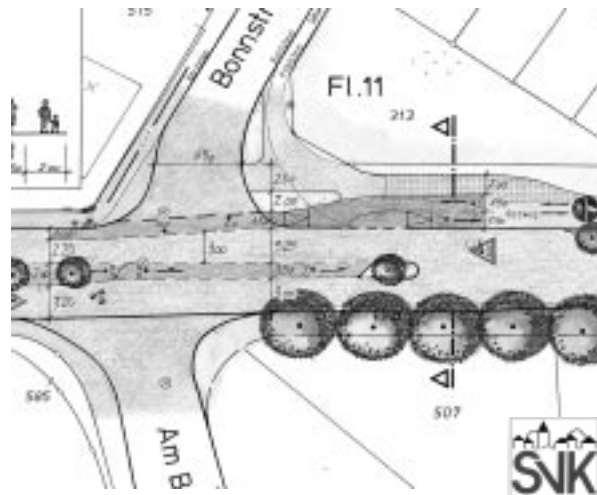
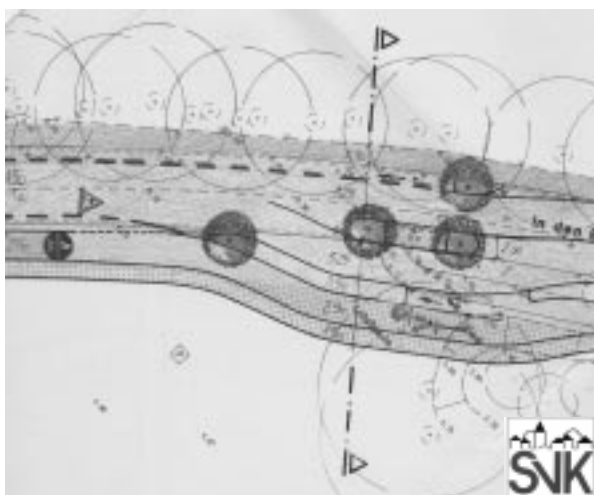
ISLAND

If there is enough space available, the building of an island is recommended as crossing support. By this means it is possible to cross the driveway in two steps. The width of the street is reduced to 3,25m at the point of installation of the island.

Right bicycle track

Left bicycle

In the following example a combined two-way path for pedestrians and cyclists leads to the entrance of the town. Within the



town two protecting lines will be marked to secure bicycle traffic. The length of the turning lane is at least 10 m, which

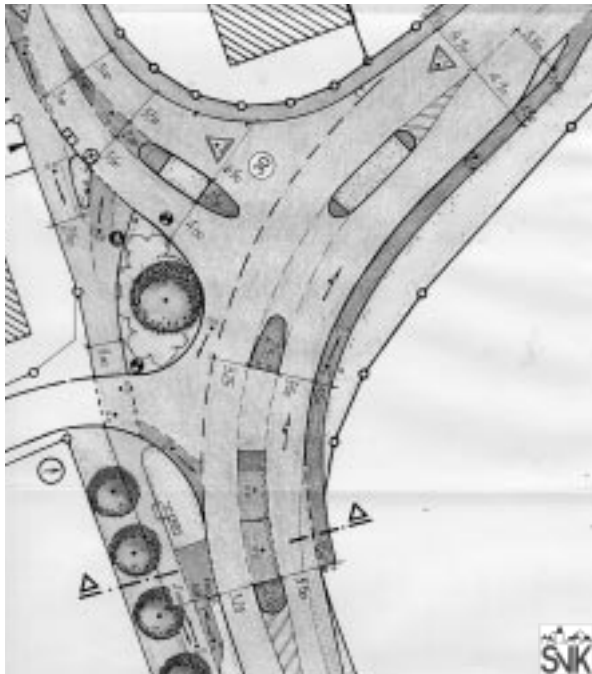
enables diagonal crossing. In the left picture, a plant bed with a high tree marks the start of the northern protecting lane.

The following examples show the support of bicycle crossings through islands:

5.2 JUNCTIONS AND INTERSECTIONS



Especially at complex crossing points a detailed planning is required, because all possible directions of the bicycle traffic have to be considered.



In this example cyclists are protected by both islands and turning lanes, which consider the ideal driving line for a diagonal crossing as basics of the planning.

6. RESUMÉE

In summary the Erftkreis in one of the first administrative districts which presents a worked out strategy for securing intersections within the network of bicycle tracks and has exemplary character in planning safe intersections for cyclists.

THE BENEFITS OF ADVANCED STOP LINES AND CYCLE LANES FOR CYCLISTS, PEDESTRIANS AND ACCIDENTS IN EDINBURGH

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ENGLISH

THE BENEFITS OF ADVANCED STOP LINES AND CYCLE LANES FOR CYCLISTS, PEDESTRIANS AND ACCIDENTS IN EDINBURGH

Over the last few years, Edinburgh has been installing advanced stop lines and cycle lanes on a number of important cycle routes. This is part of its strategy of reallocating road space for more sustainable forms of transport and working towards a network of routes throughout the city.

Analysis of traffic flows and accidents on these routes has shown that there have been significant improvements for cyclists, particularly in terms of accidents, whilst the threatened problems of capacity have not materialised. There also appear to be some benefits for pedestrians.

DEUTSCH

DIE VORTEILE VON VORGEZOGENEN HALTELINIEN UND RADSPUREN FÜR RADFAHRER UND FUSSGÄNGER UND IN BEZUG AUF VERKEHRSUNFÄLLE IN EDINBURGH

In den letzten paar Jahren hat Edinburgh auf einer Reihe wichtiger Fahrradstrecken vorverlegte Haltelinien angebracht und Radspuren angelegt. Dies ist Teil der Strategie der Stadt, auf den Straßen wieder Platz für nachhaltige Formen der Fortbewegung zu schaffen und auf ein stadtdeckendes Streckennetz hinzuarbeiten.

Eine Analyse der Verkehrsflüsse sowie der Unfälle auf den betroffenen Strecken hat gezeigt, daß es für die Radfahrer insbesondere was die Unfälle anlangt zu signifikanten Verbesserungen kam, während die angedrohten Kapazitätsprobleme ausblieben. Außerdem scheint es auch für die Fußgänger zu einigen Verbesserungen gekommen zu sein.

SLOVENSKO

KORISTI NAPREDNEJŠIH USTAVLJALNIH ČRT IN KOLESARSKE PROGE ZA KOLESARJE, PEŠCE TER PROMETNE NESREČE V MESTU EDINBURGH

Zadnjih nekaj let Edinburgh umešča naprednejše ustavljalne črte in kolesarske proge na številne pomembnejše kolesarske poti. To je del lastne strategije ponovne razdelitve cestnega prostora za bolj znosne oblike prevoza, kot tudi za nastajajoče omrežje poti skozi mesto.

Analiza prometnih tokov in prometnih nesreč na le-teh poteh je pokazala, da je prišlo do pomembnih izboljšav za kolesarje, posebno kar se nesreč tiče, čeprav se grozeči problemi prostornosti še niso uresničili. Tudi pešci imajo s tem nekaj koristi.

WEDNESDAY

CYCLING IN GRAZ - SEEN FROM THE FEMALE PERSPECTIVE

Sissel Jenseth

Drammen/Norway

Uschi Krepler

Graz/Austria

Ursula Lehner-Lierz

Männedorf/Switzerland

(PRACTICAL OUTDOOR WORKSHOP) - SEE FRIDAY WS F8

EUROVELO - GETTING EUROPE CYCLING

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'Philip manages Sustrans' overseas relations and is proud to be a member of the EuroVelo Management Team.



EUROVELO - GETTING EUROPE CYCLING

European Cyclists' Federation in 1995, to its launch in November 1997 by Robert Coleman, Director General of Transport at the European Commission, and up to date.

It will demonstrate that EuroVelo is already influencing politicians and officials, by working with government and organisations at all levels to create employment serving cycling visitors, and allowing the politicians to show their "green credentials".

This partnership makes it easier for them to take the more difficult decisions necessary to solve Europe's transport problems.

FÖRDERUNG DES RADFAHRENS IN EUROPA

Dieses Referat beschreibt die Geschichte des Projekts EuroVelo von seiner Initiierung durch den Europäischen Radfahrerverband im Jahre 1995 über seine Eröffnung im November 1997 durch Robert Coleman, den für das Verkehrswesen zuständigen Generaldirektor der Europäischen Kommission, bis hin zur Gegenwart.

Wir werden zeigen, daß EuroVelo bereits Politiker und Funktionäre beeinflusst, indem man mit Regierungen und Organisationen auf allen Ebenen zusammenarbeitet, um Arbeitsplätze in der Versorgung von Fahrradtouristen zu schaffen, und es den Politikern gestattet, ihre „grüne Visitenkarte“ zu zeigen.

Diese Partnerschaft erleichtert es ihnen, die schwierigeren Entscheidungen zu treffen, die zur Beseitigung der Verkehrsprobleme Europas erforderlich sind.

Das Referat beschreibt, wie EuroVelo der Öffentlichkeit die Möglichkeit bietet, die Freiheit und die Annehmlichkeiten des Radfahrens zu entdecken, indem es hilft, im täglichen Leben auf das Fahrrad umzusteigen.

EVROPA NAJ KOLESARI

Prispevek bo opisal zgodovino projekta EuroVelo, ki ga je leta 1995 vpeljala Evropska kolesarska zveza, kot tudi njegovo sprožitev novembra, leta 1997 s strani Roberta Coleman, generalnega direktorja za promet pri Evropski komisiji, ter sodobne načrte.

SLOVENSKO Prispevek bo tudi demonstriral kako EuroVelo že vpliva na politike in uradnike, tako, da sodeluje z vlado in organizacijami na vseh stopnjah, da bi ustvaril zaposlitev kolesarskim uporabnikom, kot tudi dovolil politikom pokazati njihove "zelene poverilnice".

To partnerstvo jim tudi olajša sprejemanje težjih odločitev, ki so potrebne za reševanje evropskih prometnih problemov. Prispevek bo razložil, kako ponuja EuroVelo javnosti možnost odkrivanja svobode in veselja do kolesarjenja, kot tudi pomoč pri izbiri kolesarjenja v vsakdanjem življenju.

EUROVELO - GETTING EUROPE CYCLING

NATIONAL CYCLE ROUTES IN EUROPE

In countries all over Europe and throughout the world, national cycle routes are being developed. All address two main objectives:

- to offer safer and more attractive travel for cyclists in an increasingly trafficked world
- and to promote cycling to people who have grown up unaware of its many attractions.

These national routes generally include traffic-free paths and local-access-only roads, quiet country roads, and traffic-calmed city streets. The traffic-free sections are training grounds for inexperienced cyclists, who can gain confidence and expertise before graduating to the remainder of the route. At the same time the high-profile national route helps to justify traffic calming, speed restrictions, junction improvements etc, needed to redress the balance between the car and the bicycle.

AN EXCELLENT INVESTMENT

In economic terms, the long distance routes have been a great success. The C2C route in northern England created a new tourism market worth around ?2 million a year in a rural area of high unemployment. Up to 80% of hotel beds on the Danube Cycle Route in Austria are taken by cyclists. The Swiss National Cycle Routes, opened last year, are forecast to repay their investment in one year.

National cycle routes are outstandingly positive projects. Because they are collaborative, each partner - government, professional, NGO, commerce - can display their own expertise and appreciate the others.

We can be confident that the process of developing the Danish, Dutch, Swiss or the UK national cycle networks has changed the way many officials involved - planners, engineers, tourism professionals, policy makers - view cycling.

It has also changed the culture of the partners on the cycling side; we have become more professional, learned new technical, legal and political skills and formed new friendly relationships with our "non-cycling" partners.

THE NEXT STEP: A EUROPEAN SCALE

Now a project has begun that will take this to a continental scale; EuroVelo, the European cycle route network. The challenges of this project are enormous - Europe has 40 countries, 100 languages, dozens of political and administrative systems and too many wars. However, while the project may appear visionary - and it is visionary indeed - the results so far and the success of the national routes shows that it is practical and necessary.

Fund assembly for EuroVelo is a hugely complicated task. The EuroVelo Management Team is continuously negotiating funding support from all over Europe... and this is an area where your help is crucial; any offers of help or imaginative fundraising ideas are very welcome. To date EuroVelo has 55 funding partners in 24 countries.

The main work in progress is the planning of the 12 EuroVelo routes. Consultants from ten different countries have identified the best possible routes, both by direct personal route-finding on the ground and by negotiation with governments and local authorities, cycling and other groups.



Graphic 1

These route studies have used basic

EuroVelo route selection criteria, defining traffic levels, route surfacing and type, gradients and landscape, accommodation and other facilities etc. These criteria will now be refined to give the definitive set of EuroVelo standards. This too is a huge technical task and requires international consultation, to agree standards for countries differing in their social, economic and technical situation.

However the record of EuroVelo to date is one of quite remarkable successes. Below are some examples of how local and regional organisations have been able to use EuroVelo to support and promote their own plans and projects - even during the preparatory phase.

EXAMPLE 1: LA ROCADÉ VERTE DU HAVRE

The cycling group, Association SABINE, had long-standing plans for a "greenway" round the city of Le Havre and a French coastal route. In 1997 they began to use the existence of EuroVelo to promote their local project, and by autumn 1998 had secured funds for an international work camp to build a crucial 600m section of route in the north of the city. Work continues on "La Rocade Verte", which will form a significant and attractive part of EuroVelo route 6.

EXAMPLE 2: THE EUROVELO ECONOMIC IMPACT STUDY

The initial EuroVelo economic impact study by Staffordshire University Business School (UK) revealed a growing interest in cycle tourism across Europe. They made contact with over 50 organisations and a number, including the Ministère de la Région Wallone (B), the Danish Tourist Board and Rogaland County (N), are considering ways to measure market demand and the economic impact of cycle tourism. We hope that these and other partners, particularly in eastern and southern Europe, will join forces for a more complete study.

This will be one of the most important outputs of EuroVelo. Economic justifications for investment in major cycle routes are lacking at present. EuroVelo will work to establish the necessary study, not only of jobs gained through cycle tourism but also of the other economic benefits such as public health improvements, reductions in pollution etc.

EXAMPLE 3: THE CZECH REPUBLIC

EuroVelo work in the Czech Republic is coordinated by the Transport Research Center in Brno, working with the Regional Development

Agency for Central Moravia, which has good contact with towns and villages along most of the route. The country as a whole has been impressively quick to see the benefits of EuroVelo, and has already designated a north-south EuroVelo route between the Polish and Austrian borders (as part of EuroVelo route 9).

The city of Olomouc, meeting place of EuroVelo routes 6 and 9, has already committed itself to the development of both routes - and is using them as the framework for a more complete local route network, which will benefit local as well as visiting cyclists.

EXAMPLE 4: EUROVELO ROUTE 6: A BID UNDER ECOS-OUVERTURE

A consortium of local authorities along EuroVelo route 6, The Channel to Black Sea, is bidding to the ECOS-Ouverture programme of the European Commission. If successful the project will have a budget of ?1.2 million. Each partner would appoint a project officer or team to carry out detailed route definition - testing different approaches to this aspect of international cycle route design.

Based around the existing experience of organisations in Belgium and the Czech Republic, the project would seek also to establish units in Nord Pas de Calais (F), Thuringia (D) and Poland.

EXAMPLE 5: SLOVENIA

EuroVelo acts as a supportive framework for the establishment of cycling projects, budgets, working groups and policies across the whole European continent; it is already achieving this aim in Slovenia. The EuroVelo route 9 study brought together a national working group from government, cities and the cycling world which will establish a signing system and study the route across Slovenia in more detail.

We are confident that EuroVelo will lead to many other concrete projects and developments for the promotion of cycling. These will range from the construction of local urban routes - mostly used by cycling commuters to work or school - to major tourism projects.

A PROJECT WITH INFLUENTIAL SUPPORT

A satisfying step forward for EuroVelo last year was the offer of patronage from the president of the European Parliament, José María Gil-Robles Gil-Delgado.

Other influential people and organisations are also involved. The members of the EuroVelo Steering Committee, for example, have professional, political and commercial experience which is rare in the cycling world and which can help assure the success of this project. We hope that EuroVelo will also help them to achieve their own objectives.

One of the most important future benefits of EuroVelo will be convincing commercial organisations to invest in cycling tourism. Working with us, they will measure the profits made and the pay-back time on their investment. The economic impact data produced by these partners - and by EuroVelo - will help many people to take cycling seriously... and when more business sectors are working with us we will be much more successful in getting Europe cycling.

THE FUTURE FOR EUROVELO

The first EuroVelo route is still a long way off. Before it can be opened, standards must be agreed for traffic levels, surfaces, facilities, signing and mapping and many other details, acceptable throughout the continent. However, there are many things that EuroVelo can do now which support the development of routes and the promotion of cycling... and which help EuroVelo partners achieve their own various objectives.

Within the next year you will see the first publications from EuroVelo for general use, including a quarterly newsletter and "The Cyclist's Guide to Europe" - a guide to the existing long-distance routes which may form part of the EuroVelo

EuroVelo Steering Committee

- Gerard van Woudenberg, Vice-Chairman Tourism Commission, **Alliance Internationale de Tourisme & Federation Internationale de l'Automobile**
- James Currie, Director -General, DG XI, **Commission of the European Union**
- Tom Godefrooij, President, **European Cyclists' Federation**
- Domingo Jiménez-Beltrán, Executive Director, **European Environment Agency**
- Walter Leu, Executive Director, **European Travel Commission**
- Lisette Jespersen, Chairman, **Idévrkstedet De Frie Fugle**
- John Grimshaw MBE, Executive Director & Chief Engineer, **Sustrans**
- Hein Verbruggen, President, **Union Cycliste Internationale**
- Annie Brouder, Chairman Eurogare Working Group, **Union Internationale des Chemins de Fer**
- (as Observer) Robert Coleman, Director -General, DG VII, **Commission of the European Union**

network. We hope these will attract commercial sponsors - both will be good ways to reach the world of cycling professionals and the interested public.

Graphic 3

EuroVelo will also publish the first international cycle route development manual, with technical and other guidance.

The vitally important EuroVelo contacts database will continue to expand. This is a very valuable "Who's Who" of politicians, administrators, planners, civil engineers, cycling and tourism experts and business contacts.

Local, regional and national route projects will increasingly be set up to create sections of EuroVelo route and to profit from the international profile of EuroVelo. Although EuroVelo cannot at present offer direct financial support for these projects, we do expect the EuroVelo "seal of approval" to help in raising project finance.

We believe that EuroVelo can play a vital role in the future promotion of cycling. It will take cycling infrastructure, and its use by cycle tourists, to a scale at which the international tourist industry can identify this as an important market sector. It can involve all levels of government in infrastructure projects whose popularity and international profile is guaranteed. And it can speak to the hundreds of millions of Europeans who do not yet recognise cycling as an orthodox, officially sanctioned way of travelling.

The goal of every European organisation is to spread the best practice across the continent and encourage its replication. EuroVelo, as a practical project offering measurable benefits for the regions through which it passes, is the ideal mechanism to spread the good news from the cycle friendly cities and states. Ride with us across the continent, and see for yourself that the vision is a practical reality.



EUROVELO PROJECT WITH PILGRIMS ROUTE AS EX-CAMPLE

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Jens Erik Larsen is civil engineer from the Technical University of Denmark and author of several books about planning for cyclists and about holiday cycling in Denmark. Bicycle consultant in Idevaerkstedet De Frie Fugle, Copenhagen and member of the Management Team of the EuroVelo project.



ENGLISH

EUROVELO PROJECT WITH PILGRIMS ROUTE AS EX-CAMPLE

If something is cycling into the next Millennium and at the same time crossing frontiers by bicycles, the EuroVelo Project initiated by the European Cyclists Federation, surely is. The project is hopefully ready to start the implementation phase from May 1999 after a preparatory phase during 1998 with money from EU and other sponsors. The aim is to build a European cycle route network of 12 routes. The first one is planned to open in year 2000 or 2001.

The presentation will include an up to date status of the project and show different examples of international routes and tell about the big advantages of the project.

As an example the above mentioned pilgrims route will be an excellent example of the historic theme, which are very valuable in bicycle tourism especially when it comes to the marketing.

The presentation will include the road from Trondheim to Oslo and the historic "Hérvejen" in Denmark and the popular "El Camino de Santiago" in Spain.

Like pilgrims crossed borders during centuries, cyclists will in future follow their track.

WEDNESDAY

DEUTSCH

DAS PROJEKT EUROVELO AM BEISPIEL DER „PILGERSTRASSE“

Wenn es darum geht, ins nächste Jahrtausend zu radeln und mit dem Fahrrad gleichzeitig Grenzen zu überwinden, dann verdient das vom Europäischen Radfahrerverband initiierte Projekt EuroVelo mit Sicherheit Erwähnung. Das Projekt ist nach einer Vorbereitungsphase im Jahr 1998 mit Unterstützung der EU und anderer Geldgeber hoffentlich dazu bereit, ab Mai 1999 in die Implementierungsphase zu gehen. Das Ziel von EuroVelo besteht in der Schaffung eines europäischen Radstreckennetzes aus 12 einzelnen Radrouten. Die erste soll im Jahr 2000 oder 2001 eröffnet werden.

Dieses Referat wird einen Bericht über den momentanen Projektstand mit einschließen und verschiedene Beispiele für internationale Routen vorstellen sowie über die großen Vorteile des Projekts berichten.

Die obengenannte „Pilgerstraße“ etwa ist ein hervorragendes Beispiel für das Thema Geschichte, das für den Fahrradtourismus - insbesondere wenn es ums Marketing geht - sehr wertvoll ist.

Außerdem wird das Referat eine Beschreibung der Route Trondheim-Oslo, der historischen Route „Harvejen“ in Dänemark und des beliebten „Camino de Santiago“ in Spanien umfassen.

SLOVENSKO

PROJEKT EUROVELO S PRIMEROM POPOTNIŠKIH POTI

Če nekdo kolesari v naslednje tisočletje in istočasno prečka meje s kolesom, potem je to zagotovo projekt EuroVelo, ki ga je vpeljala Evropska kolesarska zveza. Upajmo, da je omenjeni projekt pripravljen na pričetek izvrševalne faze maja, leta 1999, po pripravljalni fazi leta 1998 z denarjem EU ter ostalimi sponzorji. Cilj je izgradnja evropske kolesarske mreže 12-ih poti. Načrtovano je, da se bo prva odprla v letu 2000 ali 2001.

Predstavitev bo vsebovala sodoben status projekta, prikazala različne primere mednarodnih poti in govorila o velikih prednostih projekta.

Kot primer bo zgoraj omenjena popotniška pot odličen primer zgodovinske teme, kar je zelo dragoceno za kolesarski turizem, posebno ko gre za vprašanje marketinga.

Predstavitel bo vključevala cesto iz Trondheima v Oslo in zgodovinski "Haervejen" na Danskem, kot tudi znamenito "El Camino de Santiago" v Španiji.

Kot so popotniki prečkali meje skozi stoletja, tako bodo tudi kolesarji v prihodnosti sledili njihovi poti.

THE EUROVELO PROJECT WITH THE PILGRIMS ROUTE AS EXCAMPLE

The EuroVelo project is initiated by the European Cyclists' Federation and now managed in cooperation with Sustrans, UK and De Frie Fugle, Denmark. The purpose is to develop a European Cycle Route Network spanning the whole continent within a time span of 15 years. Whilst designed for holiday cyclists from abroad, such a network would naturally also cater to local cyclists, for both utility and recreational purposes.

The project involves aspects of many divergent fields: transport, tourism, recreation, environment, congestion and road safety, regional development, public health and fitness, cultural exchange.

The overall aim of the project is to promote a shift to the bicycle from the private car by promoting cycle touring and thereby cycling in general. In so doing, European tourism would be encouraged to develop along sustainable lines. A whole range of benefits would accrue from this, ranging from preserving the environment and creating small-scale employment opportunities to promoting European cohesion and upholding rural settlement.

The initial proposal for a European Cycle Route Network comprising 12 pan-European routes, linking all European countries. Some routes goes North - South, others West - East and two are circular routes.

The network will be largely based on existing and planned routes at a national or regional level. For each route a feasibility study have been made in order to prepare the implementation phase and to get an overview of which of the routes could be opened first. We hope that the opening of the first route can be in the Spring of 2000. Thereafter, the aim would be to open a new route each year until 2011.

The North Sea Cycle Route is already in a planning proces with an established network of local authorities. This might be the first EuroVelo route to open.

"The Wine and Gourmet Route" going from Atlantic Ocean (Nantes) to Black Sea (Constanta) follows very popular existing routes along La Loire, Bodensee and Donau and will probably be easy to marketing.

Two other routes have good themes and thereby good marketing potentials: The Amber Route through East Europe and The pilgrims Route through western part of Europe. Both routes are partly already existing.

THE PILGRIMS ROUTE

The EuroVelo route no. 3, goes from Trondheim in Norway, to Santiago de Compostela in Spain. The route follows traces of old roads which were used for big pilgrimages in the Middle Ages.

The route passes through seven countries: Norway, Sweden, Denmark, Germany, Belgium, France and Spain. Most of the countries have a developed net of bicycle routes which are used in this proposal.

HISTORY

In the Middle Ages pilgrims travelled to the most known attractions of the Christian world - Rome in the south, - Jerusalem in the east and - Santiago de Compostela in the west. Trondheim in the north, was one of the most important holy places in nordern part of Europe.

In Trondheim the holy relics of king Olav had a central meaning for Christians in Scandinavia. It began in 1030, when King Olav lost his life in a battle. Mysterious events at his grave, spread off the legend about him throughout Norway and that was to martyrise him.

For Denmark the first guide of "Hérvejen" was made by an Icelandic monk, Nicolaus, who in the 1100-century, described how the pilgrims should get to one of the biggest attractions in Europe : Santiago de Compostela by following Hérvejen down Jutland.

Most famous however is exactly the story from Santiago de Compostela:

Christian legends tell that one of the twelve apostles of Christ (St. James the Elder) had traveled widely on the Iberian peninsula, bringing Christianity to the Celtic peoples. His relics were supposedly taken to Spain (Asturias) and enshrined following his martyrdom in Jerusalem around 44 AD.

In 813 AD a hermit led by a beckoning star discovered the location of the buried relics. Over the tomb where St. James relics were found, the first church was built in 829 AD, and within 100 years Santiago de Compostela was attracting pilgrims from all Europe. By the twelfth century it had become the centre of the greatest pilgrimage in medieval Europe.

THE PILGRIMS OF TODAY

An essential background for making the Pilgrims Route today, is that this special way of travelling in the footsteps of the old pilgrims, have been getting its renaissance:

In Norway a new signed walking route between Trondheim and Oslo was made in 1997 and a "union" for "Pilgrims" have been established.

In Denmark, the national bicycle route "Hérvejen" opened in 1989. It follows the roads of the historical Pilgrims.

In Spain a signed Pilgrims Route for people walking, between Roncesvalles and Santiago de Compostela was promoted as a tourist route in 1987 and again in 1993 with financial support from the European Commission.

NORWAY

An obvious suggestion for the route through Norway, would be to follow the historical pilgrimsroute for walkers (the route is marked on the map). A guide for cheap accommodation along the route is available from the Pilgrims office in Oslo. One of the accommodations is a farm which have been a hostel through 700 years. The Pilgrimsroute passes through 29 municipals. Many of these have produced their own little guide for pilgrims. But as it is today, the route is aimed at walkers and unsuitable for a long distance cycle route, so a parallel route has been investigated.

DENMARK

The route through Denmark follows an old pilgrimsroad "Hérvejen" (means both "main road" as well as "military road"), that lies on the top of a ridge, and goes down in the middle of Jutland. By following the top of the ridge people have for ages been able to avoid the crossings of the rivers.

"Haervejen" is reckoned to start in Viborg, but the national cycle route n. 3 starts in the northern part of Jutland and part of this can be used for the EuroVelo Route.

SPAIN

In 1987 the "Camino de Santiago" (walking road) was appointed as the main cultural road in Europe, by the European parliament. Every year people follow the old traces of the pilgrims from Roncesvalles to Santiago de Compostela. To day ca. 60% of pilgrims use bicycle, ca. 40% are walking and few are riding by horse.

The route is signed all the way for walkers with the traditional cockleshell, but there isn't a signposted route for bicycles. The suggested bicycle route though, follows mostly slightly trafficked asphalt roads. Near the big cities it is difficult to avoid the big roads. The suggested route also follows main roads now and then, not to make the route too long. The suggested route is 863 km.

The Theme of the route is very remarkable with the upgrated pilgrimsroutes in Norway, Denmark and Spain. Besides

Belgium and France have many remains from the pilgrimsperiode and it's easy to find historical traces to be followed. Fortunately the historic route already includes many signposted routes, so that half of the 5122 kms are ready to use tomorrow.

Besides El Camino de Santiago in Spain is so popular, that the authorities will probably not hesitate to signpost it as soon as the EuroVelo route 3 in total is planned.

The Wallone Region of Belgium is also very positive and ready with a proposal of which 164 kms of 200 are ready to use. France will probably be the last country to finish the route, but so many initiatives concerning cycling are taken now in France, so in total we expect that the Pilgrims Route could be one of the first five EuroVelo routes to be implemented. It might be possible to get cultural fundation from The European Commission or from other funds to help financing the implementation, signposting and to produce guides and maps. Besides it's worth asking the Pilgrimsorganisations etc.

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 For futher information or for offers of support, please do not hesitate to contact the author.

AMBER ROUTE IN THE FRAME OF EUROVELO NETWORK

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- co-ordinator of Moravian cycling routes through the Regional Development Agency for Central Moravia (Olomouc)
- collaboration with the Transport Research Center in describing and equipping of cycling routes
- promotion of travel tourism (especially cycle tourism) in the region of Central Moravia
- participation at travel trade fairs (presentation of long-distance cycle routes)
- presentation of Czech Republic in the frame of Euro Velo at the conference in Logrono (Spain) launching the



PROGRESS OF AMBER ROUTE

1. Introduction - basic description of Amber Route
 - a) brief geographic and cultural description
 - b) progress in marking
 - c) short survey of technical state
2. Organization of Amber Route
 - a) co-ordination links throughout involved countries
 - b) promotional events, public relation
 - c) possibilities of financing for the future
3. Influence of the project
 - a) initiatives in Poland
 - b) high-quality infrastructure in Austria
 - c) Slovenia - active connections along the route
 - d) support from Croatian part
 - e) Czech Republic - quick advancement
 - the national long-distance cycle route : Moravian Path (the local title for the Amber Route's section) will be presented in one of other Czech entries
 - example of regional level : the city of Olomouc will be presented in one of other Czech entries
4. Quick lance at cycle tourism since the route has been promoted

EUROVELO: FORTSCHRITT DES „BERNSTEINSTRASSE“

1. Einführung - grundlegende Beschreibung der „Bernsteinstraße“

- a) Kurze geographische und kulturelle Beschreibung
- b) Fortschritt bei der Markierung
- c) Kurzer Überblick über den technischen Stand

2. Organisation der „Bernsteinstraße“

- a) Koordinierende Verbindungen zwischen beteiligten Ländern
- b) Werbeaktivitäten, PR
- c) Künftige Finanzierungsmöglichkeiten

3. Einfluß des Projekts

- a) Initiativen in Polen
- b) Qualitativ hochwertige Infrastruktur in Österreich
- c) Slowenien: aktive Verbindungen entlang der Route
- d) Unterstützung von Kroatien
- e) Tschechische Republik: rascher Fortschritt

- Der nationale Radwanderweg: Der Mährische Weg (lokale Bezeichnung für diesen Abschnitt der „Bernsteinstraße“ wird von einem der anderen Referenten aus Tschechien beschrieben.
- Beispiele auf regionaler Ebene: die Stadt Olmütz wird von einem anderen der tschechischen Referenten vorgestellt.

4. Ein kurzer Blick auf den Fahrradtourismus seit Werbung für diese Route gemacht wird

EURO VELO : NAPREDEK KOLESARSKE POTI AMBER

1. Uvod - osnovni opis kolesarske poti Amber

- a) kratek geografski in kulturni opis
- b) napredek pri označevanju
- c) kratka raziskava tehničnega stanja

2. Organizacija kolesarske poti Amber

- a) koordinacijske vezi med vključenimi državami
- b) pospeševani dogodki in stiki z javnostjo
- c) možnosti financiranja v prihodnosti

3. Vplivi na projekt

- a) iniciative s Poljske
- b) visoko kvalitetna infrastruktura v Avstriji
- c) Slovenija - aktivne povezave s potjo
- d) podpora hrvaške strani
- e) Češka Republika - hitri napredek:

- državna dolgo-distančna kolesarska pot: Moravska pot (lokalno ime za del kolesarske poti Amber) ; le-ta bo predstavljena v drugem češkem članku
- primer na regionalni stopnji: mesto Olomouc bo predstavljeno v drugem češkem članku

4. Hiter vpogled v kolesarski turizem odkar je bila ta pot pospeševana

AMBER ROUTE IN THE FRAME OF EUROVELO NETWORK

1. BACKGROUND OF EUROVELO

Since 1995 the European Cyclists' Federation has worked out on defining a Europe-wide network of cycle routes, known as EuroVelo. The project objective is to develop 12 trans-European routes linking all the countries of Europe, both within and outside the European Union, and passing through major cities. The project was officially launched in November 1997, at a conference in Logrono in Spain.

A working group within the ECF has produced an initial proposal largely based on existing and planned routes at national, regional and local level. The development of the network is organized at two levels : the central bureau produces standards, guidelines, general information and coordinates development and signposting of the network while each route will be successively developed and maintained by national and regional bodies.

This is a great occasion to start developing of national long-distance cycle routes.

2. BASIC DESCRIPTION OF THE ROUTE

HISTORICAL POINT OF VIEW

The Amber path is one of the oldest in European territory. It was used to business communicate with the world. The Amber path presented mostly the direction of journey than a real road or path. Greek Klaudios Ptolemaios was the first man who described this way. It has always gone in more branches, it was a complex of variant ways going in direction from Adriatic sea to Baltic sea. The point of issue of the path has been Aquilejo - the center of business with amber. One of main corridors of this path went from south through the harbour of Komárno (Slovakia), further on it went through the valley of the Morava river (Czech Republic), Moravian Gate to Upper Silesia (Czech - Polish area) and up to north through Torun (Poland) to the peninsula of Sambie. The most frequent traffic on the Amber path was in the 2nd century AD. The orientation lines were rivers and mountains.

LAYOUT OF THE ROUTE

Considering the EuroVelo cycle route - titled Amber Route belongs to the group of cycle routes passing mainly out of European Union. It crosses Poland, Czech Republic, Austria, Slovenia and Croatia in north-south direction.

The itinerary of the route is preliminary because some sections do not still exist and their itinerary is not still specified by local authorities. Nevertheless, there is complete information on the actual state of the project and its prospective. There was elaborated the report on the route, its results have a greater meaning than just a simple collecting of data from the territory. The main purpose of this work is creation of conditions for the proper implementation (signposting) of the cycle route and for creation of a consortium which will be charged by promotion of the route (in co-operation with the EuroVelo management committee) in the future.

The main line of the itinerary through Poland goes from Gdansk - Tuchola - Bydgoszcz - Poznan - Wroclaw to Polish - Czech border crossing . The northern part of the route has also its own variant avoiding Gdansk and from the town Tuchola it follows the main line. The length through Poland is 792 km. The majority of route goes on existing state routes.

From the Czech-Polish border crossing, the route goes on through the Eastern part of Czech Republic - Moravia. The main line goes through Jeseník - Olomouc - Kromeriz - Uherske Hradiste - Hodonin - Breclav and passes along the Morava river. The length of the route through Czech Republic is 301.5 km. It goes on existing route. The route has also its variant : Jeseník - Olomouc - Brno - Czech / Austrian border crossing : Hevlin. Both lines have their own advantages. The main line goes through the picturesque valley of the Morava river, it provides connection to Slovakia while the variant offers going through the Landscape Protected Area of Moravsky kras, the visit of the city of Brno and going to Vienna in this way is 40km shorter than the main line.

The main line continues to Slovakia (Petrov - Skalica - Brodske - Zahorska Ves - Bratislava - Hainburg), its length is 117 km. The route goes on existing current routes along the left bank of the Morava river.

The Amber Route continues to Austria where the itinerary can be divided in two areas: Niederosterreich and Steinsignpost. Both of parts are well developed and after establishing of linkages with Czech Republic and Slovenia, the Amber Route through Austria will be complete, including cycle facilities. From the Czech -Austrian border the route goes through Hainburg - Vienna - Bruck a.d. Mur - Graz - Leibnitz. The total length is 410.5km. The variant of the main line enables continuation of the Czech variant itinerary and

goes from Laa a.d.Thaya - Vienna - Graz - Leibnitz, the length is 308 km.

Next country crossed by Amber Route is Slovenia. From Austrian / Slovenian border it goes on existing itinerary to Strihovec - Maribor - Laporje - Celje - Prebold (in the length of 98 km) and the second part - recommended by Slovenian specialists - is the section from Prebold - Ljubljana - Postojna - Izola - Secovlje (length: 236 km). The cycle route goes on local ways, sometimes also on state roads. There is also the variant through Italy : Senožece - Trieste - Koper.

The last country of Amber Route is Croatia, it goes along the coast to Pula (Umag - Novigrad - Porec - Vrsar - Pula), the length is 96 km. The route follows minor roads.

3. ORGANIZATION OF THE ROUTE

In Poland, there does not exist any unified network of cycle routes. There is just one route of international character R1 (west-east) which is signposted as long-distanced. There is a network of regional cycle routes which are not connected into a frame. Poland has a unified methodology for signposting cycle routes, it is approved by the Polish Ministry of Transport. The signs have a white background, arrows are red, blue, green and black. Polish long-distance routes have red colour. Every sign has a symbol of bicycle and the number of route (for instance R 1). At the present there are no financial means for signposting.

The Czech Republic has elaborated a complete development strategy for cycling transport in CR in the frame of nationwide support of cycling transport. One of the treated issues is also development of cycle tourism. The EuroVelo project served as an expressive impulsion for launching the program : the Transport Research Center proposed the basic network of cycle routes in the Czech Republic with the priority to signpost EuroVelo routes first. As the first one there was signposted the long-distance Moravian Path (the EuroVelo - Amber Route). The Ministry of Transport approved a unified all-state methodology of signposting cycle routes. This system was already applied in the case of Amber Route which is signposted along its total length. The signs have a yellow background and distinguish types of ways which they indicate. On roads its look comes from the established transport signposting, on forest and field routes it imitates the hiking path signs: sheet-metal tablets or signs painted on tree trunks. Each sign shows the number of a route section. The Amber Route is not designated by the only number, it includes several sections with their numbers.

Slovakia has worked out its network of cycle routes in Slovakia and the unified methodology of signposting. There was established also an excellent collaboration with the Slovak Cycle Club which is the main organisation responsible for development of cycle routes in Slovakia. The system of signposting is well developed. The signs have a white background, a symbol of a cyclist and colourful distinction of a route type .

Austria has a high level of development of cycling transport. The route goes through Eastern part of Austria and is divided in two areas: Niederösterreich and Steinmark. Both of the areas are considerably focused on cycle tourism, major sections are signposted in the frame of Austrian system - the signs have a green background with white inscriptions. To finish the Amber Route in Austria, it is sufficient just to link both of the areas and enable connections to Czech Republic and Slovenia.

The development of cycling transport in Slovenia is still in the bud. There is a lack of basic network of cycle routes in Slovenia, there is not any unified methodology for cycle signposting neither. The people active in transport development feel very urgent to coordinate their country with European efforts, also through the project of EuroVelo. The project has become a good starting point for coordination of all the dispersed cycling initiatives in Slovenia. Regarding the Amber Route, the country could be divided into three coordinated areas :

- Maribor and its surroundings (the active organisation thanks to Mariborska Kolesarska Mreža)
- Ljubljana and its area
- Izola and its area

The route ends in Croatia. The country has a well developed travel tourism thanks to Adriatic Sea, but there still are not cycle ways. The route is proposed on local ways along the seaside, it is not signposted yet.

EuroVelo is one of the projects which will help to accelerate the process of involvement national and local bodies. Every implementation step of the Amber Route (EuroVelo route n.9) will be one of the proofs showing the impact of the project on development of cycling transport and cycle tourism in these countries.

4. METHODS OF PROMOTION

Beside traditional methods, also active promotion events can help a lot.

A. Promotion campaign in Czech Republic

One of the first actions which promoted the Amber Route was opening of the Moravian Path in Czech Republic - this is the title of the Amber Route's section through Czech Republic. At the same hour two cycle groups started to cycle one vis - vis another. One went in north-south direction from the Czech / Polish border to Kromeriz which is about 150 km distant (approximately in the middle of Moravia) and the second one went in south-north direction from the Czech / Austrian border - they met in Kromeriz, where a festive presentation of long-distance cycling took place. While cycling both of groups (about 50 cyclists each) addressed to mayors and council representatives and presented the necessity of further development of cycling transport in Czech republic. All the mayors along the cycle route got acquainted with EuroVelo objectives, some of them also joined the cycle groups and went together with cyclists few kilometers through their town or the whole district or they passed the whole section to Kromeriz. During the whole tour representatives of national radio stations were present and brought reports. The action was a nice example of joining a sport event with promotion campaign for regional and European long-distance cycling. You can get more information on Moravian cycling through another presentation at this conference.

B. Promotion bike tour at international level

In September 1998 the United Games Bike Tour '98 was organized. This international tour occurred for the second time, the first one was organized a year ago. The organizers were the international consortium „United Games of Nations“, the Faculty of Physical Culture at the Palacký University of Olomouc (Czech Republic) and the Czech Transport Research Center.

The first bike tour was organized under the patronage of the presidents : Mr. Václav Havel and Mr. Roman Herzog, its purpose was also to support „The Declaration of mutual co-operation between Czech and German youngsters“. The itinerary went from Berlin through Prague to Olomouc. The effort of organizers was focused on founding the tradition of international cycle tours promoting cycling transport, healthy life style and communication among young people from different countries.

This year the bike tour was focused on presentation of the EuroVelo project, the cyclists went through majority of the proposed itinerary of the Amber Route. It was organized under patronage of the Czech Minister of Transport who sent a greeting letter to the Slovenian Minister of Transport. The bike tour started in Czech Republic (Olomouc - Breclav), then the group continued through Austria (Vienna - Graz) to Slovenia (Maribor - Ljubljana - Izola). The objective was not just to inform about the EuroVelo project, but also to make connections among cities through the whole route and explain to decision-makers the necessity of financing the route. This kind of event is supposed to be repeated during following years in order to promote the Amber Route.

The coordination of Amber Route started to be implemented thanks to the promotional United Games Bike Tour. We also tried to find another way how to accelerate the process. First coordination meetings in each country of the Amber Route helped to meet representatives of important institutions active in cycle tourism.

EXAMPLE FROM SLOVENIA

As an excellent example we can mention the results from such a coordination meeting in Slovenia - there were settled first work steps for implementation of the Amber Route through Slovenia :

1. Settlement of the working group (the members come from the ministry, active clubs and cities)
2. There was approved elaboration of a complete study of the itinerary for the Amber Route across Slovenia

This negotiation brings the next proof on utility and advantages which can be produced by the EuroVelo project, especially for the countries out of EU.

At the present, there is a great need of detailed studies of cycle routes in Slovenia. To find the preliminary itinerary in Slovenia, the publication „Kolesarski izlety po Sloveniji“ (Cycle trips through Slovenia) elaborated by the Kololjub from Ljubljana (Friends of bike) helped a lot. The routes were described and put into the form of booklet, they are recommended, not sigposted. In the first period this material can be used until the detailed study for the whole country is elaborated and approved. In the area of Maribor and surroundings, there is available the approved study

for the section: Austrian / Slovenian border crossing - Maribor - Prebold.
The further recommended itinerary : Prebold - Ljubljana - Izola will be worked out.

4. INFLUENCE OF THE PROJECT

Through the EuroVelo project these countries can see possibilities of common development and experience exchange. They altogether intend to promote safe cycling transport and cycle tourism. Lack of publicity and financial means is the cause of a low level of cycling transport and cycle tourism comparing to other advanced European countries. It is visible while cycling through these countries. Austria, as an exception, is able to settle the organisation structure, sponsors, financial possibilities, precise itinerary, including cycle tourist facilities. Other countries had or have to pass a complicated process to reach the expected objectives (there must be established a co-ordination team in each country and especially concrete people responsible for the development of cycle routes in his/her country, then it is necessary to work out the basic network of national cycle routes, it is inevitable to look for covering signposting and construction costs - these points are supposed to be accomplished if those countries want to reach the Austrian standard).

EDINBURGH: MOVING CYCLING FORWARD

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EDINBURGH: MOVING CYCLING FORWARD

Edinburgh's moving FORWARD transport strategy aims to help create a civilised, safe, inclusive and sustainable city. The strategy seeks to improve alternatives to the car, reduce the need for car travel, restrain traffic and improve safety. The most ambitious of the strategy's targets is to increase cycling's share of commuter journeys from 2% in 1991 to 10% in 2010. The city is currently on course to achieve this. Re-allocation of road space is the focus of measures aimed at encouraging walking, cycling and public transport use. A cycle network is being developed, with over 70 km already existing. Cyclists are benefiting from major bus priority schemes, which are including cycle facilities at junctions and widened bus lanes. During 1997 Edinburgh installed 13km of bus and cycle lane. A further 13km is programmed for 1998. Incorporation of cycle facilities into traffic and transport works is facilitated by the Council's 'Cycle Friendly Design Guide' and 'Cycle Audit'. Edinburgh has been at the forefront of initiatives to reduce car dependence. Scotland's first 'City Car Club'(Stattauto) will open here this year, while a car free housing development is due for completion in 2000. Development of 5000 homes in the 'South East Wedge' area of Edinburgh will emphasise minimisation of car use and maximisation of walking and cycling. Measures to discourage car use are an important component of our strategy. The Council is currently investigating financial restraint tools, such as road pricing or taxing non residential parking. The focus of the road safety element of the strategy is on reducing danger through tackling the speed and volume of motor traffic. Cycling is at the heart of the strategy. So efforts to increase the role of the bicycle are inextricably linked to progress on the entire package.

EDINBURGH: FÖRDERUNG DES FAHRRADVERKEHRS

Edinburghs Verkehrsstrategie moving FORWARD soll helfen, eine zivilisierte, sichere, inklusive und nachhaltige Stadt zu schaffen. Die Strategie versucht, Alternativen zum Auto zu verbessern, die Notwendigkeit von Autofahrten zu verringern, den Verkehr einzuschränken und die Sicherheit zu steigern. Das ehrgeizigste der Ziele dieser Strategie besteht darin,

den Anteil der Radfahrten an den Pendelfahrten von 2% im Jahr 1991 auf 10% im Jahr 2010 anzuheben. Die Stadt ist gegenwärtig auf dem Wege, dies zu erreichen. Eine Neuaufteilung der Verkehrsflächen bildet den Schwerpunkt der Maßnahmen, die zum Gehen, zum Radfahren und zur Verwendung der öffentlichen Verkehrsmittel bewegen sollen. Ein Radwegenetz wird entwickelt, von dem bereits über 70 km bestehen. Die Radfahrer profitieren von großangelegten Prioritätsprogrammen für den Busverkehr, die Einrichtungen für den Fahrradverkehr an Kreuzungen und verbreiterte Busspuren umfassen. 1997 hat Edinburgh 13 km Bus- und Radspuren angelegt. Weitere 13 km sollen 1998 folgen. Die Berücksichtigung von Radverkehrsanlagen im Rahmen von Verkehrs- und Straßenbaumaßnahmen wird durch die von der Stadtverwaltung herausgegebenen Dokumente „Cycle Friendly Design Guide“ und „Cycle Audit“ erleichtert. Edinburgh war ganz vorn dabei, als es um Initiativen zur Verringerung der Abhängigkeit vom PKW ging. Der erste Stadtauto-Club Schottlands wird hier dieses Jahr seine Pforten öffnen, während eine autofreie Siedlung im Jahr 2000 fertiggestellt werden soll. Die Errichtung von 5000 Wohneinheiten im „South East Wedge“ von Edinburgh wird auf eine Minimierung des PKW-Verkehrs und eine Steigerung des Fußgänger- und Fahrradverkehrs abzielen. Maßnahmen, die zur Abkehr vom PKW bewegen sollen, sind eine wichtige Komponente unserer Strategie. Die Stadtverwaltung ist gegenwärtig dabei, finanzielle Instrumente zur Einschränkung des KFZ-Verkehrs wie beispielsweise Road Pricing oder Parkgebühren für Nichtanrainer zu untersuchen. Der Schwerpunkt der Straßensicherheitskomponente der Strategie liegt auf der Gefahrenminderung durch eine Geschwindigkeitsreduktion und Aufkommensverminderung im Bereich des motorisierten Verkehrs. Radfahren ist das Herzstück der Strategie. Deshalb sind die Maßnahmen zur Förderung des Fahrradverkehrs untrennbar mit dem Fortschritt des Gesamtpakets verbunden.

EDINBURGH : KOLESARJENJE SE POMIKA NAPREJ

Prevozna strategija mesta Edinburgh "pomikati se NAPREJ" naklepa pomagati oblikovati civilizirano, varno, vključujoče se in znosno mesto. Strategija išče izboljšane alternative avta, zmanjšanje potreb potovanja z avtom, zaustavitev prometa in izboljšanje varnosti. Najbolj ambiciozni cilj strategije pa je povečanje deleža potovanj kolesarjev vozačev iz 2% leta 1991 na 10% leta 2010. Mesto je na splošno že na poti, da to doseže. Nova delitev cestnega prostora, se osredotoča na ukrepe, ki vzpodbujajo hojo, kolesarjenje in uporabo javnega prometa. Razvija se kolesarska mreža, ki ima že 70 km obstoječih poti. Kolesarji se koristijo glavnih avtobusnih načrtov, ki vključujejo kolesarsko infrastrukturo pri križiščih in širše avtobusne poti.

Leta 1997 je mesto Edinburgh postavilo 13 km avtobusnih in kolesarskih poti. Nadaljnjih 13 km je načrtovano za leto 1998. Povezavo kolesarske infrastrukture s prometnimi in prevoznimi deli olajša svetni "Priročnik oblike prijaznega kolesarjenja" in "Kolesarska revizija". Edinburgh je bil v osredju iniciativ za zmanjševanje odvisnosti od avtomobila. Škotski prvi "Klub mestni avto" (Stadtauto) se bo tu odprl še to leto, medtem ko je avtomobilski prosto-nastanitveni razvoj pričakovan do leta 2000. Razvoj 5000.-ih domov v območju "South East Wedge" mesta Edinburgh bo poudarjal zmanjševanje uporabe avtomobila ter povečanje pešačenja in kolesarjenja. Merila za opuščanje uporabe avtomobila so pomembna komponenta naše strategije. Svet trenutno raziskuje finančno omejena orodja, kot so cenitev cest in obdavčitev parkirnih prostorov nestanovalcem. Strategija elementa prometne varnosti je usmerjena k zmanjševanju nevarnosti, tako da se loti hitrosti in jakosti motoriziranega prometa. Kolesarjenje je v samem središču te strategije. Tako so naporji za povečanje vloge kolesarjenja zapleteno povezani z napredkom celotnega programa.

EDINBURGH: MOVING CYCLING FORWARD

INTRODUCTION

Edinburgh is the capital of Scotland, which from May 1999 will be a semi-autonomous part of the UK. The city has a population of 440,000. It has a densely populated and historic core, within an overall built up area of around 80km². 85% of jobs in the City are in the service sector. Edinburgh's topography is varied. Much of the north and west of the city is relatively flat or undulating. However the city centre has some steep hills and the southern suburbs rise to around 175m. Cycling has been encouraged in Edinburgh since about 1985. This is slowly bearing fruit, with travel to work by bike now estimated at around three times its 1981 level. However cycle use remains low, at around 4% of trips to work.

THE MOVING FORWARD STRATEGY

In 1994 Edinburgh adopted the moving FORWARD transport strategy. moving FORWARD, which was based around clear targets, concentrated on initiatives achievable in the short to medium term. Early targets were focused on the year 2000.

The targets covered pollution, accidents, traffic levels and, most importantly for cycling, the journey to work modal

split. The modal split targets are summarised in table 1.

Table 1: Targets for mode of travel in Edinburgh 2000 and 2010

	1991	2000	2010
Car	48%	46%	34%
Public Transport	34%	34%	39%
Walk	16%	16%	17%
Cycle	2%	4%	10%

The most ambitious target was to increase the level of cycling five times from 1991 to 2010. This dramatic change was seen as feasible because nearly two thirds of journeys to work made by Edinburgh residents (1991) are of less than 5km. This suggests that the role of the bike could be much greater than it has traditionally been. At present Edinburgh appears to be on course to achieve its' ambitious cycling target.

Of course cycling is just one component of the transport strategy. The focus of the strategy over the past five years has been bus priority. Around 26km of new on-road bus lanes have been installed. Between 1999 and 2001 the 'CERT' guided busway will be built from the city centre to Edinburgh Airport. Two linked Park & Ride sites and a rail interchange will also be built. Through car traffic is being progressively removed from the city centre. Safety initiatives have concentrated on low cost 'Accident Investigation and Prevention' schemes. The Council has succeeded, with support from Central Government, in establishing the UK's first 'City Car Club' (Stattauto) in Edinburgh, to be run by Budget Rent-a-Car. Complementing this success, the city has a 'car free' housing development of 120 units under construction. This is due for completion in 2000.

MOVING CYCLING FORWARD: PRINCIPLES

It is self-evident that to achieve growth in cycle use, the factors which deter people from cycling must be addressed. Surveys, both in Edinburgh and elsewhere in the UK, repeatedly show that the most important deterrent to cycling is danger. Problems with storage and parking are also important. (See table 2)

Table 2: Why do you not cycle more/ own a bicycle? Survey results, Edinburgh 1995

Reason	% giving reason (more than 1 answer allowed)
The roads are too dangerous	58%
Cycling is inconvenient for the type of journeys I make	23%
It is difficult to store a bicycle where I/we live	20%
The weather is not good enough	17%
Other (None stated by more than 8%)	37%
Don't Know	10%

Integration: An understandable reaction to the above might be to suggest a large programme of spending on cycle routes and parking. However in Edinburgh, as elsewhere in the UK, spending on provision for cyclists forms only a relatively small part of overall spending on transport initiatives. This is the first of several reasons why integration with wider transport and land use policies is fundamental to promoting cycling. The second reason is that encouraging cycling means improving its' safety. This in turn requires good cycle provision and reduced traffic speeds. Without policy integration the necessary urban road space for good provision will not be made available, nor will speeds be reduced. The third reason for policy integration is that cycling is competing with car use. So policies which reduce the convenience and increase the cost of car use (eg parking controls, road pricing) are important alongside those to encourage cycle use. Finally cycling competes best over short distances. So planning policies must push in this direction rather than the opposite. This means appropriate location policies, ensuring that new development is highly 'permeable', with no dead-ends for cyclists and pedestrians, and avoiding low density sprawl which pushes travel distances beyond easy cycling range. Restricted car parking and good cycle parking provision in new development are also important.

MOVING CYCLING FORWARD: PRACTICE

Objectives, areas for action and targets: Edinburgh's cycling strategy has one fundamental objective, to increase cycle use. As noted above, this means addressing the factors which deter people from cycling, principal among which is danger. The main areas identified for action in 1994 were Cycle friendly road design, Expansion of the cycle route network, Improvements to cycle storage and parking, and Encouragement and promotion. To ensure measurable progress the cycle strategy included a number of specific commitments and targets. These are summarised in Table 3. It was seen as important that the commitments and targets referred not just to outcomes, for example share of trips made by bike, but also to actions aimed at achieving these outcomes. The main areas in which action has been taken since 1994 cover a broader range than originally identified, reflecting a growing realisation of the importance of integration with other policy areas. The progress made is outlined in the paragraphs following Table 3.

Improving cycle friendliness of new traffic schemes: This has been the area of policy which has been most successful. The training

of
British
traffic

Table 3: *moving FORWARD* cycling targets and commitments: 1995

Key Targets and commitments	Progress
Increase mode share for journey to work as shown in table 1.	2000 target looks likely
Provide cycle facilities on 40 signalled junction approaches by April '97	Achieved in 1998.
To complete 15% of Edinburgh cycle network by April 1996, a further 10% each year to 2004 and all by 2005	Close to meeting, mainly through bus/cycle lanes provided as part of GREENWAYS bus priority scheme.
To introduce Cycle Audit	Introduced 1998
To produce and distribute a Cycle Friendly Design Guide	Produced 1997
To revise guidelines for new developments to ensure cycle friendliness.	Nearing completion of major revision
To sweep urban cycle paths once a week	Yes, though maintenance problems remain

engineers and technicians has traditionally given virtually no attention to providing for cyclists. Similarly most staff had little or no experience in this area. The result of this was many traffic schemes which made life more difficult for cyclists. This was partly due to high level decisions, such as installation of high capacity roundabouts at major urban road junctions. It was also due to inappropriate detailed design, for example failing to take account of the effect on cyclists of creating 'pinch points'. Three methods have been used to try to remedy this undesirable situation. These are the production and distribution of a 'Cycle Friendly Design Guide', the introduction of a 'Cycle Audit' of all new traffic schemes, and staff training.

The Cycle Friendly Design Guide is a 12 page document, mostly consisting of schematic designs. The intention was to produce a document cheap enough to be sent to all staff to whom it might be relevant and also to developers and other outside bodies. It appears to be succeeding in raising awareness amongst staff, and is saving the time of cycling specialists, who now have to spend less time advising other staff. Cycle Audit seeks to ensure that all new schemes maximise benefits for cyclists. A checklist process is followed, in parallel with the well-established road safety audit. A limited programme of staff training seminars has been run. This is currently being expanded, with the intention that the entire traffic and transport management team, as well as all relevant technical staff, will receive training during 1999.

In combination these three processes have achieved some notable recent successes. For example the width of GREENWAYS bus/cycle lanes is maximised commensurate with maintaining a 3m general traffic lane. This has resulted in significant lengths of the 26km of new bus and cycle lane installed as part of GREENWAYS being wider than the minimum 3m. Previous practice was to install the bus/cycle lane at the 3m width, leaving a wider general traffic lane.

Modifications to car and cycle parking standards for new development: A revision to parking standards in 1994 introduced a requirement for cycle parking in all new development, reflecting cycle use at 2010 target levels. A further revision currently nearing implementation will see increases in the quality of cycle parking sought. Equally importantly, car parking will be restricted in all new developments other than outer suburban housing. Furthermore it is hoped to introduce a system of 'commuted payments', whereby developers will need to make contributions to improvements in facilities for public transport, walking and cycling instead of parking provision above the required standard.

Cycle Parking in existing developments: The lack of cycle storage in Edinburgh's many flats presents a serious barrier to expanding cycle use. The Council is currently part funding a project which aims to collate information on storage systems, and to install, and test on 'real' users, a selection of systems. The intention is at least to be able to provide good information on alternative systems. At

best it might be possible to offer grants for installation of appropriate systems.

Planning policy favouring sustainable transport: During the 1980s and early 1990s a laissez-faire central government approach to land use policies led to a significant amount of car-based edge of town development in Edinburgh. Policies are now attempting to retrieve this situation. Most notably a large new housing development to the South East of the city will be strongly focused on minimising car use. It will be built around a spinal busway to the city centre and will have good provision for cyclists and pedestrians. The Council's guidelines for road layouts in new developments have been completely re-written in order to favour walking, cycling and bus use rather than catering principally for the car.

Expansion of the cycle route network: Away from the GREENWAYS routes, relatively slow progress has been made since 1994 in expanding the cycle network. Efforts are being focused in the South central area of Edinburgh, a university dominated area where levels of cycle use were already much higher than the average for the city. In addition around 40 'Advanced Stop Lines' have been installed at traffic signalled junctions. These facilities are achieving very encouraging safety results, details of which are reported in another paper to this conference.

Improvements to facilities for cyclists as part of Workplace Travel Plans: As part of a Council-wide Green Commuter Plan, secure cycle parking, and in some cases showers and changing facilities, are now available at all major Council Offices. The Council is also working in partnership with the Edinburgh Chamber of Commerce and Enterprise to encourage major Edinburgh employers to adopt workplace travel plans.

'Safer Routes to schools': Cycle use by children for transport rather than play in Edinburgh is lamentably low, as is typical for the UK. This is a serious problem. Firstly it is a reflection of an alarming decline in independent mobility for children over the past 30 years. Secondly it is not helpful in shaping the travel habits of tomorrow's adults. This extremely important issue is currently being addressed mainly through 'safer routes to school' initiatives. Projects aimed at identifying problems for children on their journeys to school and addressing them, including through traffic engineering, are now gaining momentum. Measures will have been implemented at 4 schools by the end of 1999, but many more are now working on proposals.

Encouragement and promotion: Apart from promotion of cycling to Council employees, this is an area which has received insufficient attention since 1994.

MOVING CYCLING FORWARD - LESSONS LEARNT

What are the key reasons for Edinburgh's relative success (in UK terms) in promoting cycling? At a high level, the answer is a political and increasing institutional commitment to encouraging cycling, which was given initial impetus by a strong local campaign group. Within the Local Council Department with primary responsibility for promoting cycling, I believe that the two main reasons for success are specialist cycling staff and dedicated cycle budget. In my view, the former is the most important. The key role of cycling specialists, in a context where promoting cycling is just one of many elements of transport policy, is being a champion for culture change. In Edinburgh this has involved producing the Cycle Friendly Design Guide and Audit and pushing for their thorough implementation. It has involved contributing to policy in other areas, for example parking standards. It has involved, and will increasingly involve, training colleagues. The key message has been that to successfully encourage cycling, cyclists have to be catered for everywhere in urban areas. Cycling will not make a breakthrough merely by being catered for on a limited off-road path network.

Though specialist staff time is fundamental to promoting cycling, a dedicated budget is also very important. Influencing the design of schemes not specifically being introduced for cyclists, though valuable, will lead to piecemeal cycle provision. A dedicated budget allows for a focused cycle programme aiming to create coherent routes. This can proceed independently or can build on the otherwise piecemeal provision as part of other schemes. As well as delivering real benefits to cyclists a dedicated budget helps to reinforce the importance of cycling within the relevant department.

THE FUTURE

There is huge scope for further action to encourage cycle use in Edinburgh. A coherent cycle network on the city's streets is needed. Although parts are now in place, many important roads still lack any provision for cyclists. Changes in legislation are opening up the possibility of much wider application of 30kph speed limits. The Council has approved in principle a proposal to introduce a 30kph speed limit on all streets with a primarily residential or shopping character, leaving a skeletal network of 50kph roads. Much also needs to be done to improve cycle storage, particularly in flats and at workplaces.

There is a growing consensus on the need for action to stop Edinburgh's transport problems getting worse. Equally, there is growing understanding that this will need significant investment in alternatives to the car, especially public transport. Measures such as road user charging, which have potential to manage demand at the same time as raising revenue, are currently being considered. Though many decisions remain to be made, this suggests a cause for some optimism that a much more cycle friendly city is achievable in the first decade of the 21st century.

SUCCESFULL STRATEGIES TO INCREASE THE BICYCLE TRAFFIC IN GENEVA.

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SUCCESFULL STRATEGIES TO INCREASE THE BICYCLE TRAFFIC IN GENEVA.

Geneva has been actively pursuing the bicycle development for 15 years. Observed results are :

- within a period of 10 years the cyclists number has been multiplied by 2.3;
- the bicycle is becoming " popular " among different classes of our residents;
- partnership with businesses and organisations of different political orientation has been concluded.

The paper will treat the timing of the development through the following points :

- the mechanisms of public awareness and motivation towards technicians, politicians, journalists and population,
- the necessary steps in the evolution,
- the synergy of political actions, construction of cycles paths, promotion and lobbying
- the links between targeted public and the political or technical context.

ERFOLGREICHE STRATEGIEN ZUR STEIGERUNG DES FAHRRADVERKEHRS IN GENÈVE

Genève verfolgt schon seit 15 Jahren eine aktive Strategie zur Förderung des Fahrradverkehrs. Folgende Ergebnisse sind zu verzeichnen:

- Innerhalb eines Zeitraums von 10 Jahren ist die Anzahl der Radfahrer um einen Faktor von 2,3 gestiegen.
- Das Fahrrad wird bei verschiedenen Bevölkerungsschichten „populär“.
- Partnerschaften mit Unternehmen und Organisationen unterschiedlicher politischer Ausrichtung wurden geschlossen.

Das Referat beschäftigt sich mit dem zeitlichen Ablauf der Entwicklung und behandelt die folgenden Punkte:

Die Mechanismen der öffentlichen Bewußtseinsbildung und Motivierung von Technikern, Politikern, Journalisten und Bevölkerung

- D**
- Die erforderlichen Schritte im Rahmen des Entwicklungsprozesses
 - Synergieeffekte zwischen politischen Aktionen, dem Bau von Radwegen, Förderungsmaßnahmen und Lobbying.
 - Die Verbindungen zwischen der Zielgruppe in der Öffentlichkeit und dem politischen oder technischen Kontext.

SLOVENSKO

USPEŠNE STRATEGIJE POVEČANJA KOLESARSKEGA PROMETA V GENEVI

Geneva si že 15 let aktivno prizadeva razviti kolesarjenje. Opazovani rezultati so sledeči:

- v obdobju 10.-ih let se je število kolesarjev pomnožilo z 2,3;
 - kolo postaja popularno med različnimi razredi naših prebivalcev;
 - partnerstvo s posli in organizacijami različnih političnih usmeritev je sklenjeno.
- Predstavitev bo obravnavala časovni razvoj skozi sledeče točke:
- mehanizmi javnega zavedanja in motivacija tehnikom, politikom, novinarjem ter populaciji;
 - potrebni koraki v razvoju;
 - sinergija političnih dejanj, zasnova kolesarskih poti, pospeševanje in politični pritiski;
 - zveze med ciljno javnostjo in politično oziroma tehnično skladnostjo.

SUCCESSFUL STRATEGIES TO INCREASE THE BICYCLE TRAFFIC IN GENEVA.

"A good product ends up by imposing itself, it is only a question of time and information." It should also hold for bicycle in a city as dense as Geneva even though the bias towards cars were among the stronger in Switzerland .

A PHASED DEVELOPMENT

Retrospectively, the development of bicycle at Geneva went through several phases. Each of them matches a peculiar concern, and is supported by specific actors. Each phase has contributed to build a context favorable to bicycle and drained a new public. After the facts, it is not possible to interest a broad public without first reaching stages whose history is reported below:

The Awakening (1976-1985)

In late 70s, numerous cyclists have been severely injured at Geneva. The year in which nine cyclists died on the roads, a small group of militants mobilized and requested the generalized construction of bicycle lanes. It hoped for separated lanes at disposal everywhere, even down-town. This group was very active. It was regularly manifesting in the streets. In 1979, an association for the realization of bicycle lanes (Aspic) was founded, growing to 1500 members in a couple years.

This phase was animated and supported by bicycle militants. Their attitude was matching the gravity of the situation: extreme.

The Recognition (1985-1989)

The militant group organized itself and issued a popular initiative in 1985. It asked for the realization of 100 km of streets (out of a total of 180 km over the whole territory of the City of Geneva) redesigned for bicycles within 5 years. Since that time, cyclists needs have been acknowledged. Aspic's representatives had been integrated in environmental planning and traffic state commissions. First study and realization funds were allocated and a specialized counselors' office mandated.

The Start-Up (1989-1992)

The bicycle traffic problem being acknowledged, corrective actions still had to be legitimated and a framework officialized. Legitimation occurred at two levels: legal and technical. Legally, the 1985 popular initiative was voted by Geneva's citizens in 1989 and 80 % of the ballots were in favor. Technically, the organization at Geneva of Véloforum (a national congress) in 1992 has been a driving goal, a forum of know-how, an experimental laboratory, and a motivating deadline for realizations.

A project representative within the administration had to be created. It was structurally necessary since the administrative service in charge of the bicycle master plan was not given the necessary freedom of action. So, in 1989, C. Morel took the charge of mission delegate for bicycle.

Since the massively favorable vote, the administration got hold of the project and several motivated technicians kept a focus on bicycle. During this phase, numerous, sometimes sensational, realizations happened at a quick pace.

The Development of a Network (1992-1995)

During this phase, the priority was the completion of the existing partial tracks into a coherent and efficient network. Difficulties were both technical and operational. For instance, a couple of essential contra-flow lanes had been obstructed by illegal parking.

From then on, the mobility and freedom advantages characteristic of bicycle starts to be perceived. A new public is attracted by this transportation and the MTB craze blooms.

The Coverage by Medias (1995-1998)

Starting in 1992, the administration progressively has to concentrate on other transportation projects (completion of the highway belt, followed by the construction of tram-way lines). A new dynamic is called for. In 1995, the mandate to build facilities is extended with a promotion duty. More than a simple information duty (cyclists map, newsletter, newspaper coverages), it adds seduction and conviction efforts. The image of cyclists is positively improved by advertisement campaigns and happenings.

These promotion campaigns are based on humor, the support of personalities, and the high visibility of every success (the steady growth of cyclists, a national reward: the "bicycle oscar").

The users community diversifies. Persons sensitive to security (parents with children, for instance) dare to use bicycle because of the ever more complete network. Employees of services companies adopt bicycle and use them dressed in suit. Being a cyclist is respectable.

The Maturation (From 1999 on)

The phase objective is to find new partners able to widen the bicycle trend dynamics. These partners are not directly involved with bicycles but see an opportunity by associating with or joining the cyclists community.

Bicycle becomes a cultural reference, due to its intrinsic qualities or its strong image.

We hope to see during this phase a consolidation of the bicycle existence conditions and the generalization of this transportation among citizens.

THE ACTORS OF THE DYNAMIC

The dynamic in favor of bicycle is supported by several categories of actors, who play a role at given stages of the development of this transportation:

- militants, associations, and lobbies;
- political promoters: elected representatives and administrations;
- city constructors: engineers, architects, urbanists, investors,...;
- bicycle companies and services: bicycle vendors, mechanics workshops, express mail, rent-a-bicycle;
- beneficiaries of bicycle usage: companies which cannot afford parking, health professionals who promote the positive effects on health, family businesses down-town who see easier access to their shop;
- users of the bicycle positive image: sponsors looking after popular happenings to be associated with.

The first four categories are obvious, but the last two have the more powerful potential. To illustrate what they can do, we give examples:

- In 1993, the municipality police decided to use 22 bicycles operationally. This choice was motivated by the necessary mobility even

in traffic-jams and a greater proximity to citizens. But this choice means also propagating a new symbolic image of bicycle.

- In 1997, Geneva's Red-Cross emulated a project of bicycle renting called "Genčv'roule" (Geneva Moves). This operation served two goals: social integration jobs for local humanitarian needs of refugees or workers having exhausted their right to unemployment indemnities, clarification of the identity clash with the distinct International Committee of the Red Cross.
- "Genčv'roule" (Geneva Moves) freely lends white bicycles against a guarantee. These highly visible bicycles are a good advertisement support. Ten sponsors or so hung a plate with their logo to the bicycles, making the financial investment possible. During the six summer months about 7'000 sponsored bicycles have been lent. All sponsors renew their contract in 1999.

STRATEGIES TOKEEP PRESSURE

Being marginal and vulnerable on the streets, the bicycle has to adopt the weak's strategies to prosper. In Geneva's case the following strategies have been applied:

building strategy:

At the start, facilities were mainly developed on trips out of the traffic but alongside the big axes. Then, the multiplication of contra-flow lanes reinforced cyclists' mobility. Modifications in main streets, where it impacted most, could only happen on an ad hoc basis. A participation to all large infrastructure projects (tramways, high-way belt) helped for compensatory measure.

Taking advantage of opportunities (maintenance work, for instance) about 70 % of infrastructures have been funded by other credits than bicycle. In fact, adapting a project to make it "bicycle-compatible" costs much less than a project dedicated to create a similar street infrastructure.

mass media strategy:

The goal is to make of the bicycle development a vivid lasting event in minds. The press was informed about results of each counting campaign and about main milestones of studies and projects. Since 1997 a yearly focus of promotion was a week of happenings. This concentration allowed a partnership with daily newspapers and reached a large public.

contamination strategy:

Stakes are to win new groups acceptance by showing them unsuspected bicycle advantages. It gradually includes directly affected groups (bicycle shops), emblematic users (bicycles of the city police), media centric groups, and finally involving car proponents in partnership projects.

valorization strategy:

We started to build a positive image of bicycle using medias that we had under control (posters, radio advertisements), then by involving reporters favorable to bicycle. During promotion campaigns, emblematic users were associated to the events as reference.

LEARNINGS IN OUR EXPERIENCE

- Due to scarce resources, we focused on actions with the best return on investment with respect to both infrastructures and potential partners. Each opportunity had to be exploited.
- Progress relied on enhancing every success, showing a positive image, to keep our motivation and conviction high. In a first period, the information dealt with infrastructures, then with the increasing number of cyclists, finally with the media impact of happenings. With more infrastructures, more citizens could be interested in bicycle. The more cyclists, the growing attention of politicians and mass-media. And when mass-media puts light on a topic, sponsors are

easier to attract.

- The development process of bicycle is volatile and sensible to timing. A group might actively support bicycle for a time, and then loose its interest. The time window has to be optimally exploited to fully use its potential and generate a new dynamic with new supporters. In 1995, we unsuccessfully suggested companies to incite their employees commuting using bicycles. Three years later with the distribution of the bicycle map, several employers among which a bank asked us to send them maps and promotional material again.
- Life habits are extremely difficult to influence. Characters are unequally disposed to change, and three types emerged in Geneva's case:
 - early adopters: Curious and non conformist, they are ready to explore unproven solutions. This group is very small but requires no further incentive.
 - decision-makers facing obsolescence: A work environment or transportation system has to be changed which opens the door to alternatives. When the municipality police adopted bicycles, it was in that position: its service cars had to be renewed and the team organization to be revised.
 - victims of degraded life conditions: Transportation and environment are that poor that a change is mandatory. Ironically traffic-jams and parking shortage are best allies of bicycle. However life habits are resistant to change. For them, the promotion focused on lost advantages that bicycle could easily regain (mobility, freedom, parking facility). We also developed games and incentive to try bicycle in a neutral context. A strong reluctance to use bicycle for commuting daily could be avoid in context of leisure time or health considerations.

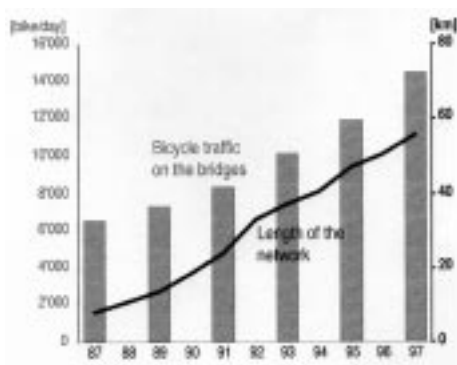


Fig. 1 : New effective facilities are followed by a strong increase of bicycle traffic

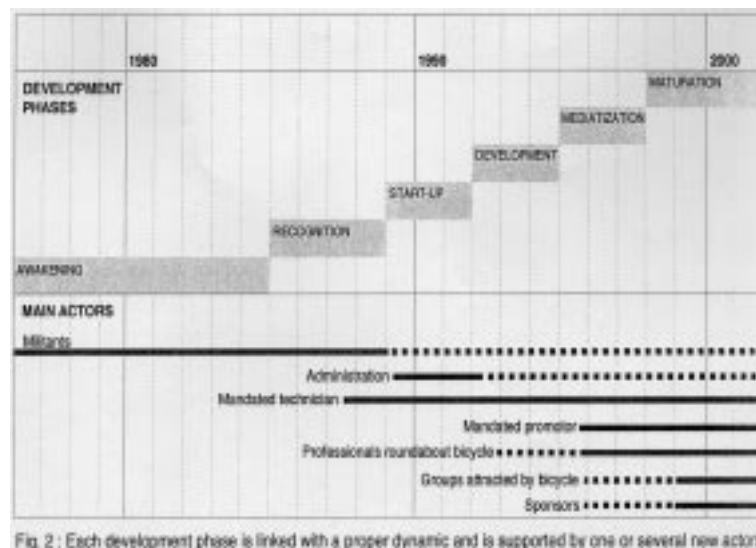


Fig. 2 : Each development phase is linked with a proper dynamic and is supported by one or several new actors

RAALTE CYCLES! COMMUNICATION WORKS TO PROMOTE CYCLING IN CITIES!

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Mr. Tjepkema is a traffic engineer and has been working as road-safety advisor for the Regional Council for Road-safety in Overijssel for 12 years. He has been involved in the development and implementation of road-safety campaigns and advises local authorities in the field of infrastructural measures, organisation and traffic demand management.

Mrs. Sluiter-Bosman is environmental advisor of the department of Environment of the Municipality of Raalte. During the last 9 years she has been involved in communication-projects which focus on influencing citizens-behaviour concerning different environmental issues. She is project-manager of the 'Raalte Cycles!'-project.

ENGLISH

RAALTE CYCLES! COMMUNICATION WORKS TO PROMOTE CYCLING IN CITIES!

How was the extensive bicycle promotion strategy, as an integral part of a large scale urban infrastructural plan in the town of Raalte carried out, and why was it successful.

During the last five years an extensive bicycle promotion plan has been carried out in the town of Raalte (approx. 26.000 inh.) to promote cycling and to safeguard the position of the bicycle as an integral part of a large scale infrastructural traffic plan.

It's main goals were to combine environmental and road-safety targets within one strategy.

The initiative of the plan was taken by the local Municipality of Raalte and in particular by the 'Alderman' for traffic. The project is a good example of how regional organisations in the field of environmental issues and road-safety can work together in the field of bicycle promotion with a local Municipality. The project-manager was the environmental advisor of the environmental department of the Municipality of Raalte.

The plan was successful and resulted in 25% more bicycle use on priority-bicycle routes, more knowledge and a more positive attitude towards cycling of the citizens of Raalte.

It has furthermore led to the continuing consultation of citizens by the Municipality in the field of traffic and transport and environmental issues.

WEDNESDAY

DEUTSCH

RAALTE FÄHRT MIT DEM RAD! KOMMUNIKATION ZUR FÖRDERUNG DES RADFAHRENS IN STÄDTEN

Wie wurde die umfangreiche Strategie zur Förderung des Fahrradverkehrs als Teil eines großmaßstäblichen städtischen Infrastrukturplans in der Stadt Raalte ausgeführt und warum war sie erfolgreich?

In den letzten drei Jahren wurde in der Stadt Raalte (ca. 26.000 Einwohner) ein umfangreicher Fahrradförderungsplan umgesetzt, um als integralen Teil eines großmaßstäblichen Verkehrsinfrastrukturplans das Radfahren zu fördern und die Stellung des Fahrrads zu sichern.

Die wichtigsten Ziele dieses Plans bestanden in der Vereinigung von Zielsetzungen in Bezug auf Umwelt und Verkehrssicherheit in einer einzigen Strategie. Die Initiative für diesen Plan wurde von der Stadtverwaltung von Raalte und insbesondere vom Verkehrstadtrat ergriffen. Das Projekt ist ein gutes Beispiel dafür, wie regionale Umwelt- und Verkehrssicherheitsorganisationen im Bereich der Fahrradförderung mit einer lokalen Stadtverwaltung zusammenarbeiten können. Der Projektleiter war der Umweltberater des Umweltreferats der Stadtverwaltung von Raalte.

Der Plan war erfolgreich und bewirkte 25% mehr Fahrradverkehr auf Prioritätsradstrecken, mehr Wissen und eine positivere Einstellung zum Radfahren unter den Bürgern Raaltes.

Außerdem hat er dazu geführt, daß die Stadtverwaltung die Bürger im Bereich Verkehr, Beförderungswesen und Umwelt weiterhin zu Rate zieht.

"RAALTE KOLESARI! KOMUNIKACIJA POMAGA PRI POSPEŠEVANJU KOLESARJENJA V MESTIH!"

Kako je izpeljana strategija razširjenega kolesarskega pospeševanja, kot sestavni del velikoobsežnega infrastrukturnega načrta mesta Raalte in zakaj je bila uspešna?

V zadnjih treh letih je bil v mestu Raalte (približno 26.000 preb.) izpeljan obsežen kolesarski pospešeni načrt, da bi oživel kolesarjenje in zavaroval položaj kolesarjenja, kot integralni del velikoobsežnega infrastrukturnega prometnega načrta. Glavni cilji načrta so prepletenost okoljevarstvenih s cestno-varnostnimi cilji v okviru ene strategije.

Samo iniciativo načrta je prevzela lokalna mestna občina Raalte, za promet pa se je še posebno zavzel "Alderman". Projekt je lep primer, kako lahko regionalne organizacije, na področju okoljevarstvenih vprašanj in cestne varnosti, sodelujejo skupaj z lokalno mestno upravo na področju pospeševanja kolesarjenja. Projektni vodja je bil okoljevarstveni svetovalec mestne uprave Raalte.

Projekt je bil uspešen, saj je kar 25% več kolesarjenja na prednostnih kolesarskih poteh, med samimi prebivalci Raalta pa je več znanja in več pozitivnega odnosa do kolesarjenja.

Nadalje je projekt vodil tudi do nadaljevalnih razgovorov med prebivalci mesta in mestno upravo, kar se tiče prometa, transporta in okoljevarstvenih vprašanj.

RAALTE CYCLES...**GENERAL INTRODUCTION**

From 1993 until now an extensive communication project called "Raalte cycles..." to promote cycling was carried out in the town of Raalte in the Netherlands. Raalte has approximately 28,000 inhabitants and is located in the eastern part of the Netherlands in the Province of Overijssel.

The project was part of a large scale infrastructural plan (Traffic Flow Plan) which consisted of a number of "cyclists friendly" measures, such as priority bicycle lanes, roundabouts, stricter parking regulations and speed-reduction measures.

The project combined road-safety and environmental targets and has led to more cycling and a more positive attitude of the local community towards cycling.

The advantage of the project is that the experiences have been documented by 'Natuur & Milieu Overijssel', the Regional federation of local environmental groups in Overijssel. This organisation was instrumental in the development, organisation and implementation of the project.

Their involvement was possible because the project was subsidised by the Ministry of Transport and Waterways and the Province of Overijssel as a pilot-project.

The presentation of the project consists of two parts.

I will focus on the role that the Regional Council for Road-Safety in Overijssel (ROVO) and 'Natuur en Milieu Overijssel', the Regional federation of local environmental groups in Overijssel (NMO), and other external organisations can play. I will also focus on the road-safety approach within the project and the importance of a collaboration between a wide range of organisations.

Mrs. Sluiter of the Municipality of Raalte and project-co-ordinator of the project, will present the content of the project, the results and the integration of the project in the organisation and plans of the Municipality of Raalte.

WHAT IS A REGIONAL COUNCIL FOR ROAD-SAFETY?

My involvement in the project was through the ROVO. This is an independent body with as 'core-business' promoting road-safety in the Province of Overijssel. Members of the board are all the organisations that play an active role in the fight against road-accidents. We believe that the best way to improve road-safety is to promote co-operation between all the organisations involved, such as, local authorities, police, local road-safety voluntary-groups, driving instructors, local branches of the Dutch bicycle federation (ENFB), the Dutch Automobile Club (ANWB), etcetera.

In the Netherlands, Regional Councils for Road-safety have been set-up in every Province in the 1980's as one of the measures by the Government to bring down the number of victims of traffic accidents. Their main tasks are to promote co-operation, stimulate partners, such as local authorities and road-safety organisations, and take new initiatives in the field of road-safety.

The main target-group of Regional councils are local authorities. They are closest to citizens and are responsible for maintaining roads and building new roads and neighbourhoods, schools, etcetera.

Our aim is for all local authorities to have their own Municipal Road-safety-plan. This should cover a period of 4 years and contain an integral approach consisting of infrastructural, planning, educational and enforcement measures.

Every year a Road-safety Action Plan should be made which should deal with the implementation of road-safety activities. Local Authorities will be subsidised by the Province unto a maximum of 75% of the total costs of the not-infrastructural activities, such as educational and public information projects.

Furthermore we would like every local authority to appoint a municipal road-safety co-ordinator, who should act as the 'spider in the web' in the field of road-safety, within the own municipal organisation as well for external organisations and citizens.

Up to now this approach has been quite successful. All 45 local authorities in Overijssel now have a municipal road-safety-co-ordinator and 44 out of 45 of them have a Municipal Road safety Plan.

The reason for us to participate in the project 'Raalte cycles' was that we wanted to find out if road-safety goals can be successfully combined with environmental goals. We have noticed that in quite a lot of cases councillors responsible for traffic believe that they have to choose between for instance environmental or road-safety goals. We wanted to show to them through the project that these goals can be perfectly matched.

Besides that the project gave us the opportunity to find out how communication and infrastuctural activities can be successfully blended.

As a result we eagerly agreed to participate when 'Natuur en Milieu Overijssel'(NMO), asked us to join them in supporting the Municipality of Raalte in carrying out a pilot-communication campaign in which road-safety and environmental-goals would be combined.

After the Municipality of Raalte and the other participants, ROVO, NMO, Province of Overijssel and the Ministry of Transport, Public Works and Water Management agreed with the project-proposal which was made by NMO a working-group, consisting of all participants, was installed.

WHAT ROLE HAVE THE ROVO AND NMO PLAYED IN THE PROJECT?

NMO was the organisation that developed and co-ordinated the campaign, especially in the initial stages. They provided know-how from previous, neighbourhood-based, campaigns which were aimed at reducing the number of automobile trips in favour of bicycle trips.

Their project-leader, Mrs. Ans Naber, had a lot of experience with communication campaigns and turned out to be instrumental for the success of the project. The co-ordination, development of activities, organisation of monitoring and the majority of implementation was all done by Mrs. Naber.

As the project continued to evolve the Municipality, in the person of Mrs. Sluiter, became more and more the central project-leader.

NMO remained instrumental in the later stages by supporting Raalte with the surveys.

NMO furthermore made reports, brochures and leaflets in which the results and the experiences of the project were presented. These were used to inform other local authorities and organisations.

NMO also organised meetings and workshops with other local authorities in order to discuss the results of the project and the opportunities and disadvantages for them should they decide to follow Raaltes example.

The ROVO played a less central role than NMO. We brought in know-how in the field of large-scale campaigns in the field of drinking and driving and speeding. We participated in the working-group that was set-up to co-ordinate the pilot-project and the local 'Raalte cycles...' -group by bringing in our expertise in the field of communication-campaigns and road-safety-issues. We actively participated in certain informative evenings for woman's-organisations. We also acted as CO-sponsor.

We especially were involved in the integration of 'Raalte cycles...' in the Municipal Road-safety Plan to ensure that it would thus become embedded in the policy plans of the Municipality.

After the project was completed the ROVO used her network to present the results of the project and to stimulate other local authorities to follow Raalte's example.

WHAT ARE THE LESSONS WE HAVE LEARNED FROM THIS PROJECT.

Support from within the Municipality, both on the political and 'workers' level, is essential for the success of a project like 'Raalte cycles', especially when it is initiated and co-ordinated by external organisations.

On both levels enthusiastic 'ambassadors', were in place such as Mr. Gorter, the Aldermen for Traffic and the Environment, mr. Henk Huizinga, the Municipal Road-Safety coordinator, and Mrs. Sluiter, who when necessary gave the project new impulses.

This also supports my credo that the success of the project can mainly be contributed to the quality of the persons involved and by a good internal organisation and coordination of tasks.

The involvement of the local community was very good. The survey which was carried out by NMO acted as a kind of panel, through which several hundred citizens could express their views on the project.

And was the combination of road-safety and environmental goals successful you might ask?

Based on the results of Raalte cycles one can not conclude that working this way is a guarantee for success. What we have learned however is that in Raalte, thanks to the project, environmental and road-safety groups worked together for the first time. More people cycle and the citizens of Raalte have a more positive attitude towards cycling. At the same time the number of bicycle-accidents has not gone up and the general number of accidents has slightly gone down.

Concluding I can say that the ROVO is very satisfied with the project Raalte cycles and hope that other local authorities will follow Raaltes example.

RAALTE CYCLES...

Communication can definitely stimulate the use of the bicycle.

My name is Gonda Sluiter. I work in the environment department of the municipality of Raalte in the Netherlands. Since environmental communication is part of my job, I am one of the project leaders for the project Raalte cycles... The main objective of this project is influencing traffic mobility, in order to stimulate the use of the bicycle.

The importance of communication, in influencing traffic mobility and road safety, is open to discussion. In the course of time, several theories have been drawn up on the subject, but in practice we learn that influencing is not so simple. Therefore, several projects have been carried out in the Netherlands, in which communication was used as an independent instrument. Following these projects, a pilot project was set up in Raalte, in which a combination of measures was used. This included communication at municipal level, a number of infrastructure measures and a campaign to inform the citizens from the viewpoints of road safety and environment.

The project Raalte cycles...

The project Raalte cycles... is based on the Traffic Flow Plan and the communication plan 'Raalte Safe for the Future'. The main objectives are: encouraging safe behaviour on the road and promoting the use of the bicycle when travelling within the community. Part of the plan was the development of an internal network of cycle paths as an infrastructure measure in favour of the cyclists.

The main items of this road network are four primary cycle routes that consist of separate cycle paths as well as cycle lanes, along existing roads. Along these routes car drivers have to give right of way to cyclists, also on crossings with important link roads. This has been realised by: changing priority situations; the introduction of one way streets and road blocks for cars; and also traffic calming features like road humps on crossings. These measures are supposed to lead to a situation in which the citizens of Raalte are able to reach the centre of the village quicker by bicycle than by car. The total cost of the project will amount to 25 million Dutch guilders, over a period of six years.

The communication plan was drawn up by the 'Natuur en Milieu Overijssel', the Regional federation of local environmental groups in Overijssel, in co-operation with the Regional council for Road-safety in Overijssel (ROVO) and the municipality of Raalte, in November 1993. In accordance with the strategy as worked out in the communication plan, communication meant more than a leaflet and some additional information about the changes in the road network. Attention was paid to the various target groups and they were approached individually. Existing structures and networks were taken into account, which saved time, money and trouble and led to a better result.

The start

At the start of the project a survey was carried out of the population of Raalte. This makes it possible to measure the results afterwards. Furthermore, interim evaluation data is available of the use of a recently constructed cycle route. The

project Raalte cycles...is a relatively large-scale project for the municipality of Raalte. When starting up a campaign like this, in which several disciplines take part, it is important to create an 'umbrella' or common theme, translated into a logo, slogan and 'mission', for it which covers the various activities. This may prevent the target groups from feeling flooded with individual activities from different sources, aimed at the same goals. When the activities are brought together under one theme, this will be less of a problem because people recognise the theme by its logo and slogan and the power of 'the strength of repetition, often used in advertising, can thus be used. The 'umbrella' also gives the opportunity to combine the activities of clubs and other organisations, under such a theme. Thus, activities can be more easily co-ordinated.

Essential for the 'umbrella' is that it is recognisable and widely known. Therefore we started in Raalte with designing a logo and thinking of a slogan. The citizens of Raalte were made familiar with logo and slogan, through publicity and activities they could easily participate in. Also existing activities -like information markets- were used to give information about the Traffic Flow Plan. All this took place under the slogan Raalte cycles...

A local committee called 'Raalte Cycles...' was set up. It had several tasks. It developed activities and gave feedback to the project-coordinator on the activities to be carried out, as well as on the target groups to be approached, and also some members of the group took part in the activities. The group is composed of representatives of organisations that are active in the fields of environment and road traffic in Raalte, two municipal council officials (road safety and environment) and active representatives of the local community.

Continuation

The strategy that was set up for the approach of the citizens with regard to the communication plan, also was used for setting up a Municipal Road Safety Plan. This meant that a method of participation was used that was relatively new for the Netherlands. The citizens of Raalte have been actively involved in thinking up a new policy, aimed at improving road safety in Raalte. Thus we tried to create a broad social basis for the plans.

After a survey had been carried out of the citizens and the organisations and clubs of Raalte, a draft plan was drawn up. This plan was presented to a group of representatives of clubs and organisations. Since road safety is everybody's concern, the composition of the group was very diverse. The members acted as representatives for several groups and citizens in the community of Raalte.

The winding up of the pilot project does not mean the end of the project Raalte cycles..... In co-operation with the local committee, a series of activities is carried out each year, according to a certain strategy. Fixed items are: a media campaign, approach of the target groups, infrastructure measures and one day's workshops on a specific topic. The role of the project assistant from NMO has been taken over by the project-coordinator of Raalte.

2. ACTIVITIES THAT HAVE BEEN CARRIED OUT

From the start of the project on, a great number of activities, aimed at the various target groups, have been carried out. These activities were set up by the project group Raalte cycles.... The municipal departments that were involved are Public Works - new infrastructure - and Environment. The Public Works department participates where infrastructure measures and the relevant public policy are concerned. The Environment department participates within the framework of environmental communication and impacts. At the start of the project, the project leader from the NMO played an important role in developing the activities.

It is impossible to present to you all the activities that have been carried out, here and now. Therefore, we selected four activities: the contest of cycling skills, a meeting for women's associations, the road safety days and the opening of a new cycle route.

The contest of cycling skills

Already at the start of the campaign, it was clear to the local committee that an attractive activity had to be organised for primary school children. This has several advantages: the target group is relatively easy to approach; it draws publicity and its supporters, parents, family and friends will be reached too. Thus grown-ups might be persuaded to use the bicycle more often. An already existing organisation, Children's Olympics, co-operated in the organisation.

Results

During a period of four weeks, the activities took place at several locations in Raalte. More than 400 children took part in the qualifying rounds. The finals were held in the centre of Raalte during the one day's workshop on road safety.

A deliberate choice was made for aspects of skill and safety, in the contest. Two examples are: using the brakes in time and riding the track on a bicycle, as slowly as possible. The children and their parents also came to the track from their neighbourhoods by bicycle. For parents and other interested people, there was a market stall with background information on the Traffic Flow Plan of Raalte.

By combining the start of the contests with the beginning of the construction of the new priority bicycle route, communication was combined with an infrastructure measure. The aim of the action was a small scale activity for each neighbourhood, in co-operation with an organisation that has experience with activities for children.

Information meeting for women's associations

When this target group was approached, the project already was in a later stage. The citizens of Raalte had been informed of the project Raalte cycles.... We wanted to reach the members of women's associations in order to consult them about the changes to the facilities and the way they are to be used. In other words: How could these women stimulate their families to use their bicycles more frequently and to behave more safely on the road. The women are members of various organisations but they were approached collectively. Preliminary to the activity, a meeting was held for the board of the associations, in order to discuss what the activities would look like. This resulted in an information meeting about the Traffic Flow Plan that was organised in an unusual way. At the meeting the Traffic Flow Plan was explained and road safety came up for discussion too. We also asked the women to consider what they themselves were able to do to promote the use of the bicycle and to stimulate safe behaviour on the road

Results

Approximately 40 women took part in the meeting. This number was smaller than we had expected but reactions were positive and so was the follow-up. Four of the women's associations organised a follow-up evening about the same subject.

An additional result of this activity was the active participation of the women's associations in setting up the Municipal Road Safety Plan.

Road safety days

In September 1995 and September 1997, a road safety day was organised by the local committee Raalte cycles..., in co-operation with clubs and organisations in Raalte that are active in the field of traffic and road safety. The 'market' was held in the centre of Raalte. The police offered the opportunity to have one's bicycle engraved, as a preventive measure against theft, and the Raalte branch of The Dutch Organisation for Road Safety (Veilig Verkeer Nederland) was present with its 'safe bicycle bus'. In this bus the citizens of Raalte could have their bicycles checked and simple repairs carried out. In 1995 there was a go-cart circuit for the children where they could show they knew traffic rules. In 1997 the cycling skills track was used again. The road safety day in 1997 was organised around the topic 'safety' and, in a joint action, personnel of the police, the fire brigade and the ambulance gave a demonstration of what happens after a serious traffic accident. On both occasions, there was an information market where people could ask questions about road safety and about the Traffic Flow Plan and a 'Raalte cycles...' -promotion-team which gave information and gave hand-outs and little presents to the public.

Results

As the name already says, 'the safe bicycle' and traffic rules were at the centre of both days. Thanks to the information market, it was possible to present the variety of information and activities of the various organisations, as one activity. Thus, the common target of 'stimulating the use of the bicycle and safe riding' was made known to several hundreds of visitors. Adults as well as children were approached in an attractive and interesting way.

Both days attracted quite a lot of media attention.

Opening of priority bicycle route 'De Hoven'

In February 1999, the priority bicycle route through one of the neighbourhoods of south Raalte was officially opened. Before the opening took place, contacts were made with the primary schools along the cycle route. The opening programme consisted of an official part, during which the mayor of Raalte and a pupil of one of the schools officially opened the cycle route, and an educational part. The pupil had to jump through a painting about travelling safely, that was made by the pupils of the schools. The educational part was left to the schools themselves. The Municipality supplied the relevant materials.

Results

These schools have so-called 'traffic parents', parents who see to it that, during school hours, attention is paid to traffic and safety. These traffic parents are actively involved in the activities. This enables a combination of theatre and serious attention to traffic and safety, during the lessons. For approximately 500 children, the route to their school has changed, thanks to the construction of the cycle path. By involving the schools, we again used a combination of communication and infrastructure measures. An additional advantage is that the traffic parents can use this activity to give extra attention to road safety, during the lessons.

3. INTERIM EVALUATION

The infrastructure measures have almost been completed, but activities within the framework of the project still go on. In the meantime, some of the results of the action Raalte cycles... have been evaluated. These figures regard the use of a newly constructed cycle route and a few of the spin-off effects.

Results of the investigation

An investigation into the effects of one of the new priority bicycle route along one of the streets in Raalte, the Deventerstraat, has been carried out. The aim of the infrastructure measures was: to improve the visibility of the area on the road available for cyclists. This was achieved by: the construction of special lanes to be used by cyclists; changing priority situations on crossings and the introduction of one way streets for cars and road blocks in several side streets, in order to reduce the flow of traffic. Cyclists are to be given priority on the entire route. The investigation data has been compared with the results of preliminary investigations about the same route. Also we conducted a survey focusing on the satisfaction of bicyclists using the route with the measures. The data we received led us to the conclusion that the route is considered safer and faster than before. Motor cyclists are still considered to be a problem, due to the great difference in speed.

It is remarkable that 47% of the cyclists own a car as an alternative means of transport. Their main reason for using the bicycle is that they consider it to be faster and easier. About 16% of the car owners also stated that they travel more often to the centre of Raalte by bicycle, since the construction of the cycle route. It is noticeable that environmental reasons are hardly mentioned. We will take this into account during the follow-up of the project.

Spin-off effects

Until now we have noticed the following spin-off effects:

- The women's associations are going to pay attention to bicycle use. During their regular meetings they will discuss their own opportunities. They also stimulate each other to encourage their family and friends to travel by bicycle more often.
- In the neighbourhood Raalte north, a working group for traffic and road-safety matters has been set up.
- Secondary schools have a direct interest in safe routes for their pupils to travel to school and the safe behaviour of their pupils on these routes. Therefore, on the initiative of the school, a project group has been set up that will examine the possibilities of paying more attention to road safety, during the lessons.
- Furthermore, a yearly plan of action regarding road safety will be implemented, in which attention will be paid to communication and education. This plan of action has been set up in the framework of the road safety plan.
- Co-operation between the various organisations and local government has been expanded.

CONCLUSIONS AND RECOMMENDATIONS

Raalte cycles... as a pilot project is finished. As a final action NMO has published an instruction booklet in Dutch. Other Municipalities and organisations can use this instruction booklet when setting up local activities. Also a more extensive report of the pilot-project, including all the survey-results was published by NMO. The knowledge we acquired in Raalte will be used for the follow-up of the project.

After the conclusion of the pilot project, the following recommendations can be made if you want to set up a

communication-campaign as part of a local traffic-flow-plan:

- Appoint a project leader and an actively participating local councillor. Make them responsible for the progress of the project and as ambassadors.
- Do not use the campaign merely to sell the infrastructural measures to the public but strive to ensure that through the campaign citizens have a say in the way the measures which are part of the infrastructural plan.
- Set measurable targets, carry out surveys before, during and after activities are carried out and publish the results.

Surveys should be carried out regularly.

- Create an 'umbrella' or campaign-theme, logo and slogan that covers the various activities.
- Within a campaign promoting cycling environmental and road-safety goals can successfully be combined.
- Make use of existing local organisations and their network, knowledge and expertise.
- Let the citizens participate in the activities and take advantage of the arguments which appeal to them and listen seriously to their problems and comments.
- Create a broad-based project group that has clear tasks, a budget and time.
- Incorporate where possible the campaign and the group within the existing Municipal organisation.
- Set aside money for communication (for instance 1% of the total costs of infrastructure projects).

I hope I have given you some idea of the role communication can play, in influencing traffic mobility and road safety, and of the importance of combining various measures under one 'umbrella'-campaign. As examples I have mentioned a few of the activities that have been carried out in Raalte and the results these activities had. This is not the end however, because influencing peoples mobility is a matter of patience.

We are determined that the activities which have had positive results will become a permanent feature of the project and of the policy of our Municipality. When developing future traffic and transport policies, we will take into account the advantages of a combination of communication and infrastructural measures.

MULTIPURPOSE TRAFFIC LANES - POTENTIAL USES

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ENGLISH

MULTIPURPOSE TRAFFIC LANES - POTENTIAL USES

Multipurpose traffic lanes are a suitable tool for expanding the network of cycling routes in urban areas, provided certain conditions are met, concerning for example, road width, traffic speeds, road alignment, parking arrangements and road markings. If a road is too small to have its own dedicated cycling path, then the introduction of these multipurpose lanes has been proved to lead to improvements in the safety of cyclists (provided the aforementioned criteria are satisfied).

Nearly all cyclist accept and use the multipurpose lanes. Thus multipurpose lane effect a separation of vehicles and cyclists. Car drivers also leave a greater side distance when overtaking a cyclist. The lane markings, serve as an orientation line which drivers do not override. They rather tend to driving nearer to the midst of the carriageway than driving on to the multipurpose lane.

WEDNESDAY

DEUTSCH

EINSATZKRITERIEN FÜR MEHRZWECKSTREIFEN

Der Mehrzweckstreifen ist durchaus geeignet, das Radverkehrsnetz im innerstädtischen Bereich zu erweitern. Allerdings müssen bestimmte Rahmenbedingungen (z.B. ausreichende Breite, Geschwindigkeitsniveau, Linienführung, Stellplatzordnung, Markierung) eingehalten werden. Ist dies berücksichtigt, bringt der Mehrzweckstreifen nachweisbare Sicherheitsgewinne für Radfahrer.

Es kommt zu einer Entflechtung der Kraftfahrzeuge und der Radfahrer, wobei sich der Überholabstand vergrößert. Die Kfz-Lenker orientieren sich an der Warnlinie, sie nehmen eher knappe Seitenabstände zur Fahrbahnmittle in Kauf, als auf den Mehrzweckstreifen auszuweichen. Der Mehrzweckstreifen wird von nahezu allen Radfahrern wahrgenommen, benutzt, akzeptiert und wird im Normalfall nicht verlassen. Bei der Errichtung von Mehrzweckstreifen ist eine begleitende Öffentlichkeitsarbeit notwendig, da nur eine geringe Anzahl der Verkehrsteilnehmer weiß, wozu es sich bei einem Mehrzweckstreifen handelt.

SLOVENSKO

POTENCIALNA UPORABA VEČNAMENSKIH PROMETNIH VOZNIH PASOV

Za širitev kolesarske mreže v središčih mest je primeren večnamenski prometni vozni pas. Seveda pa morajo za to biti izpolnjeni določeni pogoji (npr. zadostna širina ceste, nivo hitrosti prometa, načrtane poti, parkirni prostori...). Če je vse to upoštevano, predstavljajo večnamenski vozni pasovi dokazljive izboljšave varnosti za kolesarja.

Skoraj vsi kolesarji radi uporabljajo večnamenske vozne pasove. Ti pasovi povzročajo tudi ločevanje vozil in kolesarjev, saj vozniki motornih vozil pri prehitevanju kolesarjev puščajo večjo stransko razdaljo. Označitve voznih poti služijo voznikom kot orientacija, saj raje vozijo bližje sredini cestišča, kot pa da bi zapeljali na večnamenski vozni pas. Pri uvajanju večnamenskih voznih pasov, so potrebni stiki z javnostjo, saj le redki udeleženci v prometu vedo, za kaj pri tem pravzaprav gre.

EINSATZKRITERIEN VON MEHRZWECKSTREIFEN

1. RECHTLICHE SITUATION IN ÖSTERREICH

Ein Mehrzweckstreifen (am Fahrbahnrand) ist nach der Begriffsbestimmung der österreichischen Straßenverkehrsordnung „ein Radfahrstreifen oder ein Abschnitt eines Radfahrstreifens, der unter besonderer Rücksichtnahme auf die Radfahrer von anderen Fahrzeugen befahren werden darf, wenn für diese der links an den Mehrzweckstreifen angrenzende Fahrstreifen nicht breit genug ist oder wenn das Befahren durch Richtungspfeile auf der Fahrbahn für das Einordnen zur Weiterfahrt angeordnet ist.“ (StVO 1960 idF 20. StVO-Nov., 1998)

Da ein Radfahrstreifen - im Gegensatz zu Radwegen und gemischten Geh- und Radwegen (eigenständige gekennzeichnete Wege) - als Teil der Fahrbahn gilt, ist auch der Mehrzweckstreifen Teil einer solchen. Der Mehrzweckstreifen ist allerdings nicht - wie der Radfahrstreifen - ausschließlich dem Radfahrer vorbehalten, sondern darf auch von anderen Fahrzeugen benützt werden.

Die Markierung des Mehrzweckstreifens zur Fahrbahn hin erfolgt laut Bodenmarkierungsverordnung, 1995 durch eine Warnlinie, wobei der Beginn und der Verlauf mittels sich wiederholenden Fahrradsymbolen markiert ist.

Im Ausland ist der „Mehrzweckstreifen“ mit ähnlicher Funktion unter anderen Bezeichnungen geläufig: zum Beispiel in den Niederlanden als „Suggestivstreifen“, in Deutschland als „Angebotsstreifen“ und in der Schweiz als „Radstreifen“. In Deutschland wurde mit der „24. Verordnung zur Änderung straßenverkehrsrechtlicher Vorschriften vom 7.8.1997“ weitreichende Änderungen für den Radverkehr beschlossen. Unter anderem wurde in der „Verwaltungsvorschrift zum Zeichen 340 Leitlinie“ ein „Schutzstreifen für Radfahrer“ definiert, der dem österreichischen Begriff Mehrzweckstreifen entspricht.

Als Mehrzweckstreifen wird jedoch in der Literatur ebenso ein Streifen in der Fahrbahnmitte bezeichnet, der Fahrzeugen aus beiden Richtungen zum Abbiegen, Überholen oder zum Linkszufahren zur Verfügung steht. Diese Art des Mehrzweckstreifens entspricht nicht der Definition der österreichischen Straßenverkehrsordnung und hat eine gänzlich andere Funktion als der oben definierte Mehrzweckstreifen am Fahrbahnrand. Man sollte daher zur besseren Unterscheidung die Bezeichnung „Mehrzweckstreifen in Fahrbahnmitte“ verwenden. In der Schweiz ist der Begriff „Mischstreifen in Fahrbahnmitte“ geläufig.

2. FUNKTION

Der Mehrzweckstreifen verkörpert die Abkehr vom Trennprinzip, das aufgrund begrenzter Straßenbreiten oft nicht realisiert werden kann.

Er basiert auf folgender Überlegung: Für die Begegnung zweier Personenkraftwagen reicht im Großteil der Fälle eine Fahrbahnbreite von 4,50 m bei 30 km/h bzw. 4,75 m bei 50 km/h aus. Die Fahrbahn wird jedoch üblicherweise viel breiter dimensioniert. Da der Anteil der Begegnungsfälle von breiteren Fahrzeugen gering ist, wird ein Teil der Fahrbahnfläche nur selten ausgenutzt, während für die sichere Führung des Radverkehrs oft nicht mehr ausreichend Raum zur Verfügung steht. Hier setzt nun die Idee des Mehrzweckstreifens an.

Um die Fahrbahn sinnvoller nutzen zu können, wird diese in eine Kernfahrbahn (für den Kfz-Verkehr) und einen Mehrzweckstreifen geteilt. Wobei der Mehrzweckstreifen grundsätzlich dem Radfahrer vorbehalten ist und nur dann vom Kraftfahrzeug befahren werden darf, wenn die Breite der Kernfahrbahn für die Begegnung zweier Kraftfahrzeuge nicht ausreicht. Dies kommt nur bei Begegnungen mit mindestens einem breiteren Fahrzeug vor.

Vorschlag: einheitliche Begriffsbestimmungen in den deutschsprachigen Staaten.

Abbildung 1:
Mehrzweckstreifen in Wien
(Jedleseer Straße, 21. Bezirk)



3. LITERATUR

Da die gesetzliche Möglichkeit der Errichtung eines Mehrzweckstreifens in Österreich erst seit 1994 gegeben ist, haben bislang nur sehr wenige Gemeinden von dieser Möglichkeit Gebrauch gemacht. Eine Studie im Auftrag der Stadt Wien - auf die in den nachfolgenden Kapiteln eingegangen wird - analysiert den

Einfluß des Mehrzweckstreifens auf das Fahrverhalten. In einer Vorher-Nachher-Untersuchung wurden auf unterschiedlichen Straßenabschnitten in Wien Veränderungen im Verkehrsablauf und im Fahrverhalten durch die Markierung der Mehrzweckstreifen gemessen bzw. beobachtet. Zusätzlich wurde durch eine Befragung der Verkehrsteilnehmer vor Ort der Wissensstand und das Verständnis für diese Maßnahme untersucht. (Robatsch K., 1997). Eine kritische Übersicht bietet die VCÖ-Publikation „Straßen für Radfahrer“ (Rauh W., 1995). Die Einsatzmöglichkeiten von Mehrzweckstreifen behandelt eine Diplomarbeit zum Seitenabstandsverhalten von Radfahrern und Pkw (Stratil-Sauer G., 1996).

Neben diesen Arbeiten können auch Studien aus Deutschland und den Niederlanden zur Bewertung herangezogen werden. Für Deutschland wurden in den Empfehlungen für Radverkehrsanlagen (ERA, 1995) Einsatzkriterien definiert und optimale Breiten sowohl für die Fahrbahn als auch für den Angebotsstreifen selbst festgelegt. Vorher-Nachher-Untersuchungen von „Mehrzweckstreifen“ wurden unter anderem auch in Bonn (Angenendt W. et al., 1992), Krefeld (Füsser K., Steinbrecher J., 1991) und Bad Homburg (Haag-Bingemann H., Hupfer C., 1996) durchgeführt.

4. EINSATZGRENZEN UND -BEDINGUNGEN

Der Mehrzweckstreifen ist durchaus geeignet, das Radverkehrsnetz im innerstädtischen Bereich zu erweitern, es müssen jedoch bestimmte Rahmenbedingungen berücksichtigt werden. Diese sind beispielsweise: ausreichende Breite des Mehrzweckstreifens und der Kernfahrbahn, Leistungsfähigkeit von Mehrzweckstreifen und Kernfahrbahn, angrenzende Stellplatzordnung, Markierung, Fortführung des Mehrzweckstreifens und Geschwindigkeitsniveau der Kraftfahrzeuge.

Welche Art von Radverkehrsanlagen errichtet werden soll, ist abhängig von der vorliegenden Straßenart (Gemeindestraße, Landesstraße, Bundesstraße), von den Kfz-Geschwindigkeiten, der Kfz- bzw. Radverkehrsstärke, der Zusammensetzung des Radverkehrs (Beruf-, Schüler-, Einkaufs-, Freizeitverkehr...) und Art der Quellen und Ziele. Für den Radverkehr ergeben sich durch den Mehrzweckstreifen dann Vorteile, wenn die gegebenen Platzverhältnisse die Anlage eines Radfahrstreifens oder eines Radweges nicht ermöglichen.

Durch die Markierung von Mehrzweckstreifen müssen im Normalfall keine Stellplätze entfernt werden. Von besonderer Bedeutung ist aber auch die Tatsache, daß die Radfahranlage nicht auf Kosten des Fußgängerverkehrs geht.

Bei einer Verkehrsstärke von mehr als 1.500 Kfz pro Stunde bzw. 100 Lkw und Busse pro Stunde sollte der Radverkehr im Trennprinzip (Radfahrstreifen, Radweg) vom Kfz-Verkehr geführt werden. Bei einem Geschwindigkeitsniveau über 50 km/h ist nur im Ausnahmefall (z.B. auf kurzen Abschnitten, wo für andere Radfahranlagen kein Platz zur Verfügung steht) ein Mehrzweckstreifen anzulegen.

Die Kernfahrbahn sollte im Begegnungsverkehr 4,50 m im Regelfall nicht unterschreiten. Für den fließenden Verkehr sollte die Fahrbahn - also Kernfahrbahn und Mehrzweckstreifen - mindestens 7,00 m breit sein. Ab einer Breite der Kernfahrbahn, die für den Begegnungsverkehr Lkw - Lkw ausreicht, ist dies von der Funktion her kein Mehrzweckstreifen, sondern ein Radfahrstreifen.

Fahrzeuge, die auf dem Mehrzweckstreifen halten oder parken, stellen ein besonderes Hindernis für den sicheren Ablauf des Radverkehrs dar. Durch die Markierung der Mehrzweckstreifen kann die Anzahl der in zweiter Spur haltenden Kfz verringert werden. Parkraumbewirtschaftung und deren Überwachung verbessern hierbei die Voraussetzungen für alle Radfahranlagen im innerstädtischen Bereich.

Die Anlage von Mehrzweckstreifen in Straßen mit hohem Parkdruck oder starkem Liefer- und Ladeverkehr ist nur dann zu empfehlen, wenn Halteverbote rigoros durchgesetzt werden, da der Mehrzweckstreifen ansonsten oft als zusätzlicher Parkstreifen mißbraucht wird. Eine deutliche Markierung der einzelnen Abstellplätze kann zu einer zusätzlichen Verbesserung der Situation führen.

5. BREITENBEDARF UND MARKIERUNG

Eine Verbesserung des Verkehrsablaufs und eine Erhöhung der Verkehrssicherheit durch den Mehrzweckstreifen kann nur dann erreicht werden, wenn die Mindestbreiten eingehalten werden. Aufgrund der Untersuchungen ergibt sich eine Mindestbreite von 1,25 m, wobei die Standardbreite 1,5 m betragen soll.

Bei Parkstreifen neben Mehrzweckstreifen ist die gemeinsame Breite beider Streifen zu beachten. Aus den Beobachtungen läßt sich ableiten, daß neben Längsparkstreifen für Pkw eine gemeinsame Breite von Mehrzweckstreifen und Parkstreifen von 3,5 m das Mindestmaß ist. Parkstreifen, die auch für Lkw und Busse zugelassen sind, erfordern entsprechend größere Breiten.

Ein erhöhtes Sicherheitsgefühl für die Radfahrer wird durch eine gemeinsame Breite von mehr als 3,5 m mit einer

deutlichen Abgrenzung zwischen Park- und Mehrzweckstreifen ermöglicht.

Bei Schräg- und Senkrechtparkstreifen neben Mehrzweckstreifen ist ein mindestens 1,0 m breiter Schutzstreifen zwischen den Stellplätzen und dem Mehrzweckstreifen notwendig.

Derzeit gibt es laut Bodenmarkierungsverordnung 1995 zwei Markierungsarten (6,0 m Strich und 1,5 m Unterbrechung bzw. je 1,5 m Strich und Unterbrechung) bei der Errichtung von Mehrzweckstreifen. In diesem Zusammenhang wird vom Verfasser dieses Artikels vorgeschlagen eine einheitliche Markierungsart bzw. Begriffsbestimmung in Europa zu verwenden.

Da an einigen Stellen Veränderungen in der Belegung der angrenzenden Parkstreifen zu beobachten waren, konnten hier weitgehende Vergleiche durchgeführt werden. Es zeigt sich daß eine Markierungslinie zwischen Parkstreifen und

Mehrzweckstreifen	Regelquerschnitt	Mindestbreite
ohne angrenzende Stellplätze	1,50 - 2,00 m	1,25 m
bei Längsparkern	1,50 - 2,00 m	1,50 m
	(2,00 m - 2,50 m Parkstreifen)	(1,80 m Parkstreifen)
bei Schräg- und Senkrechtparkern	1,50 - 2,00 m *)	1,25 m *)

*) Zusätzlich ist ein mindestens 1,00 m breiter Schutzstreifen zwischen Stellplatz und Mehrzweckstreifen anzuordnen

Mehrzweckstreifen sowohl auf das Abstandsverhalten der Radfahrer als auch auf eine korrektes Abstellen der Kfz am Fahrbahnrand günstige Einflüsse hat.

6. VERHALTEN UND AKZEPTANZ

Der als Mehrzweckstreifen ausgeführte Teil der Fahrbahn wird von Kraftfahrzeugen nur noch in Ausnahmefällen benutzt. Es kommt zu einer Entflechtung des Kfz- und Radverkehrs.

Der Mehrzweckstreifen wird von nahezu allen Radfahrern wahrgenommen, benutzt und akzeptiert. Verwendet wird vor allem das linke Drittel des Mehrzweckstreifens, um einen möglichst großen Abstand zu den Parkern bzw. zum Hochbord einzuhalten. Nur im Ausnahmefall wird der Mehrzweckstreifen vom Radfahrer verlassen; dies ist vor allem dann der Fall, wenn Mehrzweckstreifen zu schmal sind oder Parker in zweiter Spur stehen bzw. in den Mehrzweckstreifen hineinragen.

Die Kfz-Lenker orientieren sich an der Warnlinie und vermeiden diese zu überfahren. Sie nehmen eher knappe Seitenabstände zur Fahrbahnmitte in Kauf, als auf den Mehrzweckstreifen auszuweichen. Zu schmale Mehrzweckstreifen verleiten den Kfz-Lenker Radfahrer mit zu geringem Seitenabstand zu überholen.

Rund 90 % der Radfahrer bleiben auf dem Mehrzweckstreifen, während rund 10 % entlang der Warnlinie „balancieren“. Auf Abschnitten, wo der Mehrzweckstreifen unter einem Meter breit ist, akzeptieren nur 60 % der Radfahrer den Streifen, ein Drittel fährt entlang der Warnlinie.

Das Kfz-Geschwindigkeitsniveau änderte sich durch die Markierung der Mehrzweckstreifen nicht signifikant. Es ist allerdings eine leicht fallende Tendenz erkennbar, vor allem dann, wenn eine Einfärbung des Mehrzweckstreifens durchgeführt wird und die Straße dadurch optisch verschmälert wird.

7. ÖFFENTLICHKEITSARBEIT

Bei der Errichtung von Mehrzweckstreifen ist unbedingt eine begleitende Öffentlichkeitsarbeit notwendig, da derzeit ein großes Informationsdefizit bei den Verkehrsteilnehmer festzustellen ist. So wissen insgesamt nur rund 36 % der Radfahrer bzw. 14 % der Kfz-Lenker, worum es sich bei einem Mehrzweckstreifen handelt (gute bzw. ausreichende Beschreibung).

Der Großteil der Radfahrer gab an, daß sie sich nach Anbringung des Mehrzweckstreifens sicherer fühlen als vor der Markierung. Die subjektive Sicherheit steigt mit der Breite des Mehrzweckstreifens noch zusätzlich an. (Robatsch K., 1997)

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GUIDANCE OF CYCLISTS AT PUBLIC TRANSPORT STOPS

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GUIDANCE OF CYCLISTS AT PUBLIC TRANSPORT STOPS

Interactions and conflicts of cyclists at different stop forms in Germany have been investigated for the Federal Ministry of Transport by video-based behavioural studies. Where cyclists are guided on cycle-tracks next to the carriageway, between waiting area and footpath or through mixed areas for waiting, walking and cycling (lateral type) interactions and conflicts with pedestrians and passengers arrive more often and are more serious than on the carriageway with busses / trams. Cyclists guided on cycle lanes, recommended cycle lanes, on bus lanes or without any separation (carriageway type) and busses calling at or leaving stops have an adverse effect on one another. In order to avoid conflicts, recommendations are given concerning the arrangement of stops and guidance forms fitting to observed situations.

ENGLISH

RADVERKEHRSFÜHRUNG AN HALTESTELLEN DES ÖFFENTLICHEN VERKEHRS

An Haltestellen des Öffentlichen Verkehrs kommt es aufgrund sich überlagernder Nutzungsansprüche auf häufig engem Raum zu Beeinträchtigungen und Gefährdungen. Gegenwärtig (1997/98) untersuchen wir für das deutsche Bundesministerium für Verkehr verschiedene Führungen des Radverkehrs im Bereich von Haltestellen im Forschungsprojekt „Radwegführung an Haltestellen“, da im Sommer 1998 abgeschlossen wird. Aufgrund unterschiedlicher Konflikte wird nach Fahrbahn- und Seitenraumführung des Radverkehrs differenziert: Bei der Fahrbahnführung (im Mischverkehr, auf Radfahr- oder Angebotsstreifen) können Konflikte zwischen Bus oder Straßenbahn und Radfahrern auftreten, wenn die ÖV-Fahrzeuge die Haltestelle anlaufen oder verlassen bzw. die Radfahrer an den Fahrzeugen vorbeifahren und eventuell noch mit dem Gegenverkehr in Berührung kommen. Bei dieser Führung werden vorrangig die Radfahrer gefährdet oder beeinträchtigt. Art und Umfang der Interaktionen werden an den Haltestellenformen Kap, Fahrbahnhaltestelle und Busbucht auf Radfahrstreifen, Schutz(Angebots)streifen und mitgenutztem Bussonderfahrstreifen untersucht. Bei der Seitenraumführung liegt das Konfliktpotential zwischen Radfahrern, ein- und aussteigenden sowie wartenden Fahrgästen und querenden bzw. Fußgängern im Längsverkehr. Unterschieden wird nach Radwegen, unmittelbar am Fahrbahnrand und solchen zwischen Wartefläche und Gehbahn und gemeinsam genutzten Flächen zum Warten, Gehen und Radfahren. Das mit Video aufgezeichnete Verhalten und die Interaktionen von Radfahrern, Fahrgästen und Fußgängern im Haltestellenbereich in Verbindung mit weiteren Einflußfaktoren wie Führungswechsel im näheren Umfeld der Haltestellen geben Hinweise auf Flächen- und Raumbedarf und die räumliche Orientierung ein- und aussteigender Fahrgäste. Resultierend aus den Untersuchungsergebnissen wird angestrebt, Mindestabmessungen der Bewegungs- und Warteflächen festzulegen. Je nach beobachtetem Konfliktpotential der einzelnen Führungsformen des Radverkehrs und der Haltestellengestaltung werden zur Konfliktvermeidung situationsangemessene Führungsformen und mögliche Veränderungen für die Haltestellengestaltung empfohlen.

DEUTSCH

NAVODILA KOLESARJEM NA JAVNIH TRANSPORTNIH POSTAJALIŠČIH

Za Zvezno prometno ministerstvo so bili raziskani medsebojni vplivi in konflikti za različne oblike postajališč v Nemčiji, podkrepjeni z videoposnetki študij obnašanja. Kjer so kolesarji vodeni na kolesarske poti poleg cestišča, med čakalnim prostorom in pločnikom, ali med mešanimi območji za čakanje, hojo, kolesarjenje (lateralni tip), tam prihaja pogosteje do medsebojnih vplivov in konfliktov s pešci, potniki, kot tudi bolj resno, kot pa na cestišču z avtobusi / tramvaji. Kolesarji vodeni po kolesarskih poteh, priporočenih kolesarskih poteh, na avtobusnih poteh ali brez ločenosti (cestiščni tip) ter avtobusi, ki zavijejo na ali zapustijo postajališča, imajo nasprotujoči si vpliv drug na drugega. Da bi se izognili tem konfliktom, so na voljo priporočila, ki zadevajo ustroj postajališč in vodene oblike, ki so primerne opazovanam situacijam.

SLOVENSKO

RADVERKEHRSFÜHRUNG AN HALTESTELLEN

Haltestellen des Öffentlichen Verkehrs sind Problembereiche, da sich auf meist engem Raum Flächen- und Sicherheitsansprüche der ein- und aussteigenden sowie wartenden Fahrgäste, der Fußgänger und Radfahrer mit den Anforderungen des Öffentlichen und Kfz-Verkehrs überlagern.

Für das deutsche Bundesministerium für Verkehr, Bau- und Wohnwesen untersuchten wir für ein gerade abgeschlossenes verschiedene Führungen des Radverkehrs an unterschiedlichen Haltestellentypen.

Für den Radverkehr ergeben sich je nach grundlegender Führungsform unterschiedliche Konfliktsituationen. Bei der Fahrbahnführung (im Mischverkehr, auf Radfahr- oder Schutz- bzw. Angebotsstreifen) können Konflikte auf der Fahrbahn zwischen Bus oder Straßenbahn und Radfahrern auftreten, wenn die ÖPNV-Fahrzeuge die Haltestelle anlaufen oder verlassen bzw. die Radfahrer an den Fahrzeugen vorbeifahren und eventuell noch mit dem Kfz-Gegenverkehr in Berührung kommen. Bei dieser Führung werden vorrangig die Radfahrer gefährdet oder beeinträchtigt und/oder der Betriebsablauf des Öffentlichen Nahverkehrs gestört. Art und Umfang der Interaktionen wurden in drei Gruppen differenziert nach den Haltestellentypen Busbucht (FB I) Fahrbahnrand (FB II) und Kap (FB III) und im Mischverkehr, auf Radfahrstreifen, auf Schutz(Angebots)streifen und auf einer mitgenutzten Busspur untersucht.

Wenn der Radverkehr im Seitenraum geführt wird, liegt das Konfliktpotential auf Gehwegniveau zwischen Radfahrern, ein- und aussteigenden sowie wartenden Fahrgästen und Fußgängern. Bei dieser Grundform wurden drei verschiedene Haltestellenbereiche untersucht:

SR I: Radweg unmittelbar am Fahrbahnrand, wo auch die Fahrgäste ein- und aussteigen,

SR II: Radweg zwischen Wartefläche und Gehweg,

SR III: gemeinsam genutzte Fläche zum Warten, Gehen und Radfahren.

Bei drei von 25 untersuchten Haltestellen wechselte die Führung des Radverkehrs im Bereich der Haltestelle. Auswahlvoraussetzungen für die je vierstündigen Video-Verhaltensbeobachtungen waren möglichst hohe Radfahrer- und Bus- bzw. Bahnfrequenzen (mindestens 4 Fahrzeuge/Stunde).

Die Breiten der Radwege bei Seitenraumführung betrugen zwischen 1,0 und 1,8 m, die Radverkehrsanlagen auf der Fahrbahn waren zwischen 1,1 und 1,6 m breit. Die Gehwege waren überwiegend 2,0 oder 2,5 m breit, wobei Warteflächen, -häuschen oder unterstände oft in dieser Fläche integriert sind. Insgesamt wurden 10.663 Radfahrer, 4.449 einsteigende und 3.868 aussteigende Fahrgäste erfaßt. Die Auswertung der video-gestützten Verhaltensbeobachtungen an den ausgewählten Haltestellen führte zu folgenden vorläufigen Ergebnissen:

- Von den 9.756, vollständig in die Untersuchung einbezogenen Radfahrern trafen 1.115 mit Fahrzeugen des Öffentlichen Nahverkehrs zusammen, im Mittel also 11 % der beobachteten Radfahrer (Schwankungsbreite zwischen 1,1 und 24,2 %). Die meiste Zeit können Radfahrer den Haltestellenbereich durchqueren, ohne mit Bus oder Bahn, ein- oder aussteigenden Fahrgästen zusammenzutreffen.

VERHALTEN DER FAHRGÄSTE

- Weder beim Aus- noch beim Einsteigen lassen die Fahrgäste an ihrem Orientierungsverhalten (z.B. durch Drehen des Kopfes) erkennen, ob und wie sie sich auf vorbeifahrende Radfahrer einstellen. Die Verhaltensbeobachtungen ließen am ehesten dann auf eine Orientierung beim Aussteigen schließen, wenn die Fahrgäste eine mehr als 2 m breite Wartefläche zu queren hatten.
- Bei Haltestellen ohne Wartefläche (SR I) zwischen Radweg und Fahrbahn warteten sie am Rande des Gehweges in Nähe der Hauswand und betraten frühzeitig den Radweg, sobald der Bus nahte. Der Radweg wurde nur dann von Wartenden mitbenutzt, wenn der Abstand zwischen Wartehäuschen und Radweg zu gering war.
- Bei den Haltestellen mit Radweg zwischen Wartefläche und Gehweg (SR II) konzentrierten sich die Wartenden am Wartehäuschen, wenn dort die Warteflächenbreite akzeptabel war; der Gehweg wurde dann vorgezogen, wenn sich dort Sitzgelegenheiten befanden oder der Kfz-Verkehr an der Wartefläche als zu stark empfunden wurde. Eine eindeutige Abhängigkeit von der verfügbaren Fläche war nicht festzustellen, da auch die Struktur des Umfeldes (Geschäfte mit Auslagen etc.) beeinflußt. Im allgemeinen hielten die Wartenden den Radweg ganz frei, nur in wenigen Fällen wurde der Radwegrand belegt.
- An den Haltestellen, wo Radfahrer, Fußgänger und Fahrgäste die Fläche gemeinsam nutzen (SR III), warteten die Fahrgäste am rechten Seitenrand zur Gebäudeseite orientiert in der Regel am Unterstand und bewegten sich bei Herannahen des Buses frühzeitig zum Fahrbahnrand.

VERHALTEN DER RADFAHRER

- Im allgemeinen folgten die Radfahrer der vorgegebenen Führung im Seitenraum.
- Bei allen Seitenraum-Varianten wurden Rad- bzw. Gehweg auch in Gegenrichtung benutzt, an einzelnen Haltestellen lag der Anteil linksfahrender Radfahrer zwischen 16 und 29 %. Dies läßt sich nicht durch die Haltestellenform erklären, sondern eher durch dortige Zielaktivitäten, z.T. verknüpft mit schlechter Überquerbarkeit der Fahrbahn. Der Anteil linksfahrender Radfahrer war dann besonders niedrig, wenn dort viele Radfahrer unterwegs waren.
- Bei den neun untersuchten Haltestellen mit Fahrbahnführung folgten insbesondere an Fahrbahnrand-Haltestellen die Radfahrer der vorgegebenen Führung. Bei Busbuchten war dies nur eingeschränkt der Fall, hier wurden auch Gehflächen und Bucht in Fahrt- und Gegenrichtung benutzt.
- Bei Führungswechsel im Haltestellenbereich ist die Akzeptanz der vorgegebenen Führung davon abhängig, welche Führung bzw. welche Bedingungen im Anschluß an die Haltestelle vorzufinden sind. Endete der Radweg hinter der Haltestelle, so fuhren einige Radfahrer schon vorher auf die Fahrbahn. Bei Fahrbahnführung (Radfahrstreifen) vor und hinter der Haltestelle und 1,0 m breitem Radweg im Seitenraum an der Haltestelle (ohne Wartefläche) blieb der weitaus größte Teil der Radfahrer auf der Fahrbahn, nur eine Minderheit benutzte den Radweg. Sobald Radfahrer jedoch mit einem Bus im Haltestellenbereich zusammentrafen, wechselten nahezu alle in den Seitenbereich, davon zwei Drittel auf den Radweg und ein Drittel auf den Gehweg. Beim Wechsel vom Radweg im Vorfeld der Haltestelle auf eine Busspur an der Haltestelle wechselten vier Fünftel auf die Busspur, das restliche Fünftel blieb auf dem sehr breiten Gehweg, was einer Fortführung der ursprünglichen Führung entspräche. Beim Wechsel vom Radweg auf eine Mischfläche an der Haltestelle und dahinter zurück auf einen Radweg fuhren über die Hälfte der beobachteten Radfahrer so auf der Mischfläche, als würde der vorher am Fahrbahnrand verlaufende Radweg weitergeführt. Knapp die Hälfte benutzten bereits die Busspur, die im weiteren Streckenverlauf für den Radverkehr freigegeben ist, wenn der Radweg kurz hinter der Haltestelle endet.
- Eine untersuchte Straßenbahnkaphaltestelle mit durchgängiger Führung im Mischverkehr ist als Sonderfall zu betrachten. Kopfsteinpflaster und die für Rollstuhlfahrer abgesenkten Zufahrten zur Haltestelle sorgten dafür, daß annähernd zwei Drittel der Radfahrer von der Fahrbahn auf das Haltestellenkap fuhr. Von diesen Radfahrern befuhren fast die Hälfte die 2,3 m breite Wartefläche und 15 % den 2,5 m breiten Gehweg. Inzwischen wurde diese Haltestelle so umgebaut, daß die Fahrbahnführung weitgehend akzeptiert wird.
- Die mittleren Geschwindigkeiten der Radfahrer lagen unbeeinflusst von ÖV-Fahrzeugen bei Seitenraumführung bei 19,4 km/h ($v_{85} = 22,4$ km/h), in Gegenwart von Bus oder Straßenbahn bei 18,4 km/h ($v_{85} = 21,2$ km/h). Radfahrer fahren also nur geringfügig langsamer, wenn ÖV-Fahrzeuge anwesend sind und mit ein- und aussteigenden Fahrgästen zu rechnen ist. Die mittleren Geschwindigkeiten lagen über dem Durchschnitt auf Verbindungsrouten oder stärkerer Nutzung durch studentischen Radverkehr. Sie waren dann leicht reduziert, wenn der Radverkehr direkt am Fahrbahnrand oder im Mischverkehr geführt wurde. An einigen Haltestellen waren die mittleren Geschwindigkeiten um so niedriger, je mehr Personen sich im Haltestellenbereich aufhielten und bewegten. Bei Fahrbahnführung lagen die Geschwindigkeiten zwischen 18 und 22 km/h und gingen beim Zusammentreffen mit dem ÖV-Fahrzeug durchschnittlich um 1 km/h zurück (zwischen 0,3 und 2,8 km/h). Bei „illegaler“ Seitenraumnutzung fuhren die Radfahrer 2 km/h langsamer.

INTERAKTIONEN

Im Haltestellenbereich müssen die Verkehrsteilnehmer ihr Bewegungsverhalten räumlich und zeitlich aufeinander abstimmen.

- Im Seitenraum (SR I, II) mußten Radfahrer sich vornehmlich mit Fußgängern und an zweiter Stelle mit wartenden Fahrgästen abstimmen; bei den Mischflächen dominierten eindeutig Interaktionen mit Wartenden. Interaktionen waren seltener bei starken Radfahrer- und geringen Fahrgastfrequenzen und häufiger bei engen Seitenräumen und sowohl hohen Fahrgast- als auch Radfahrerfrequenzen.
- Bei Fahrbahnführung fuhren die meisten Radfahrer links am stehenden Bus vorbei, nur eine Minderheit blieb dahinter oder näherte sich langsam. Busse blieben überwiegend hinter den Radfahrern, und nur selten verzögerte sich die Anfahrt des Buses durch passierende Radfahrer. Bei Führungswechsel und dem besonderen Straßenbahnkap gab es deutlich mehr Interaktionen im Seitenraum als auf der Fahrbahn.

KONFLIKTSITUATIONEN

In drei Schweregrade differenzierte Gefahrensituationen waren bei Seitenraumführung häufiger. Bei Radwegen am Fahrbahnrand (SR I) dominierten leichtere Konflikte, und zwar mehrheitlich mit Aus- und Einsteigern. Umsteigehaltestellen

besonders hohe Konfliktanteile auf. Da beim SR II-Typ wesentlich häufiger schwere und mittlere Konflikte vornehmlich mit Aus-, Einsteigern und wartenden Fahrgästen auftraten, wirkt sich die Wartefläche offensichtlich nicht konfliktverhindernd aus. Auf den Mischflächen kam es nur zu leichten Konflikten.

- Bei den Haltestellen mit Fahrbahnführung konzentrierten sich die meisten kritischen Situationen auf das Straßenbahnkap. Alle Konflikte ereigneten sich dort im Seitenraum. Bei der Haltestelle mit Führungswechsel gab es durch Radfahrer ausgelöste Konflikte nur im Seitenraum. Bei den anderen Fahrbahnrandhaltestellen wurden kritische Situationen ganz überwiegend von den Bussen verursacht (dichtes Auffahren, Bedrängen, Schneiden, wodurch sich in einem Fall ein Folgekonflikt zwischen Radfahrer und Pkw ergab). Bei den Busbuchten traten leichte, vorrangig durch die Busse ausgelöste Konflikte auf.

AUSWIRKUNGEN AUF VERKEHRSABLÄUFE

Die durchschnittlichen Haltezeiten der ÖV-Fahrzeuge unterschieden sich kaum bei Seitenraum- und Fahrbahnführung. Bei Seitenraumführung korrelierten sie mit der Zahl der ein- und aussteigenden Fahrgästen. Verzögerungen bei Anwesenheit von Radfahrern ergaben sich in ähnlichen Größenordnungen. Beeinträchtigungen gab es sowohl für den Öffentlichen als auch für den Radverkehr, wobei die Reisezeitverluste für den Radverkehr etwas größer waren. Die Betroffenheit hing bei Fahrbahnführung mit den Haltestellentypen zusammen: Bei Busbuchten waren sowohl die Busse als auch der Radverkehr, beim Straßenbahnkap (Mischverkehr) nur der Radverkehr, bei Fahrbahnrandhaltestellen war die Betroffenheit nicht eindeutig den Verkehrsarten zuzuordnen.

ZUSAMMENFASSENDE GEGENÜBERSTELLUNG DER VOR- UND NACHTEILE BEIDER FÜHRUNGSFORMEN FÜR DIE EINZELNEN VERKEHRSARTEN

	Vorteile	Nachteile
Fahrbahnführung		
Fußgänger	nur in Einzelfällen Interaktionen oder Konfliktsituationen	
Fahrgäste	wenig Gefährdung durch Radfahrer	
Öffentlicher Verkehr		Reisezeitverluste (Ř 1,5 - 6,6 s), Beeinträchtigungen
Radverkehr		Reisezeitverluste (Ř 3,8 - 7,6 s), Beeinträchtigungen kritischer Haltestellentyp: Busbucht
Seitenraumführung		
Fußgänger		mehr Interaktionen, mehr und schwerere Konflikte
Fahrgäste		mehr Interaktionen, mehr und schwerere Konflikte
Öffentlicher Verkehr	keine Beeinträchtigungen durch Radfahrer	
Radverkehr		Fahrgäste achten kaum auf Radfahrer, belegen Radwege bei Herannahen des Busses

EMPFEHLUNGEN FÜR DIE HALTESTELLENGESTALTUNG

Die im Ergebnis empfohlenen Haltestellengestaltungen sind abhängig von den zur Verfügung stehenden Flächenbreiten, den Breitenanforderungen aller Verkehrsarten und anderer Nutzungen an den Haltestellen, der Stärke des Rad- und Fußverkehrs, der Zahl der Fahrgäste und der Frequenz des Öffentlichen Verkehrs.

Busbuchten erfordern breite Seitenräume und sollten wegen der mehrfachen Beeinträchtigungen nur ausnahmsweise angelegt werden.

Führungswechsel sollten vermieden werden. Insbesondere sollte vorher auf Fahrbahnniveau geführter Radverkehr auch im Haltestellenbereich über die Fahrbahn geführt werden, anstatt ihn hinter die Einstiegs- bzw. Wartefläche in den Seitenraum zu lenken.

Zur Verringerung oder Vermeidung der Konflikte sind neben Separation der genutzten Flächen, Warneinrichtungen (Belagwechsel, Markierungen etc.), Leiteinrichtungen wie Schutzgitter zur Kanalisierung von Querungsvorgängen, die Platzierung der Wartehäuschen/Unterstände direkt in der Nähe des Einstiegs in Bus oder Bahn, die Transparenz der Haltestellenausstattung zur besseren gegenseitigen Wahrnehmung, Verengung der Radverkehrsanlagen im Seitenraum (Geschwindigkeitsreduktion) und das Anhalten der Radfahrer beim Halt von Bus und Bahn geeignet.

PROMOTING CYCLING AS A WAY TO A HEALTHIER LIFE

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PROMOTING CYCLING AS A WAY TO A HEALTHIER LIFE

In an experiment funded by the UK government, around 100 adult volunteers aged 18-65 who did not previously take regular exercise were encouraged to cycle several times a week. At the start they were given physical tests to measure their health-related fitness (blood pressure, weight, energy output etc.) as well as a questionnaire on their travel habits, lifestyle and attitudes.

Each subject was re-tested after six weeks and again after four months if still cycling. Most of them showed significant improvements in health-related fitness and mental well-being from relatively small amounts of cycling. The experiment strongly suggests that official encouragement of cycling could bring a substantial improvement in public health in addition to any transport benefits.

FÖRDERUNG DES RADFAHRENS ALS WEG ZU EINEM GESÜNDEREN LEBEN

In einem von der britischen Regierung finanzierten Versuch wurden etwa 100 erwachsene Freiwillige im Alter zwischen 18 und 65 Jahren, die zuvor nicht regelmäßig Bewegung gemacht hatten, dazu aufgefordert, mehrmals die Woche radzufahren. Zu Beginn wurden sie untersucht, um ihre gesundheitliche Fitness (Blutdruck, Gewicht, Energieverbrauch)

DEUTSCH etc.) zu ermitteln, und mußten einen Fragebogen über ihre Fahrtgewohnheiten, ihren Lebensstil und ihre Einstellung ausfüllen. Jede der Testpersonen wurde nach sechs Wochen und, falls sie weiter mit dem Rad fuhr, nach einem weiteren Zeitraum von vier Monaten erneut untersucht. Bei den meisten hatten sich die gesundheitliche Fitneß und das geistige Wohlbefinden bereits durch relativ wenig Radfahren signifikant verbessert. Dieses Experiment legt dringend nahe, daß die Förderung des Radfahrens von offizieller Seite zusätzlich zu Vorteilen im Bereich des Verkehrswesen eine wesentliche Verbesserung der öffentlichen Gesundheit bewirken könnte.

SLOVENSKO POSPEŠEVANJE KOLESARJENJA KOT POT K BOLJ ZDRAVEMU ŽIVLJENJU

V eksperimentu, ki ga je financirala vlada Velike Britanije, je bilo okoli 100 odraslih prostovoljcev, starih med 18 in 65 let. Le-ti niso predhodno redno telovadili in tako so bili sedaj vzpodbujani kolesariti nekajkrat tedensko. Na začetku so jih kondicijsko testirali, da bi izmerili njihove zdravstvene sposobnosti (krvni pritisk, teža, energijsko porabo, itd.). Izpolniti so morali tudi vprašalnik svojih potovalnih navad, življenjskega stila in stališč. Vsak posameznik je bil po šestih tednih ponovno testiran in potem še enkrat po štirih mesecih, če je seveda še kolesaril. Večina testirancev je pokazala pomemben napredek tako v zdravstvenem, kot tudi mentalnem blagostanju, čeprav so relativno bolj malo kolesarili. Eksperiment močno povdarja, da lahko uradna vzpodbuda pri kolesarjenju prinese bistven napredek zdravju javnosti in ne samo prevoznih koristi.

PROMOTING CYCLING AS A WAY TO A HEALTHIER LIFE

The link between regular exercise and good health has been well established in studies throughout the world. People living in affluent countries who maintain a sedentary lifestyle have been shown to be more at risk from diseases such as Coronary Heart Disease (CHD), strokes, obesity and some diabetes. It has been predicted that within a few years CHD will become the most common cause of premature death throughout the world.

For such people at risk, cycling is one of the few, if not the only form of exercise which can easily be fitted into a daily routine. In particular, journeys to and from work of up to 8 km can often be made more quickly by bicycle than by any other means. There are of course many advantages to the population at large if there was a reduction in peak hour use of motorised transport. There would be less congestion, pollution and traffic danger. Cycling offers the further attraction of delivering better health to the participant as well as benefits to the general traffic situation and to the environment.

This paper discusses the results of an experiment which was conducted during 1997 by Allott Transportation, a division of Allott & Lomax Consulting Engineers of Manchester, England, with the participation of two well-known UK specialists in transport, fitness and health issues, Bill Tuxworth and Dr Mayer Hillman. The experiment studied the physical effect of regular cycling on a sample of males and females aged 18-65, none of whom previously cycled or took other regular exercise. It aimed to find out:

Does regular cycling make people healthier, to what extent and in what way?

If so, how much cycling would be needed to make an improvement in someone who currently takes no regular exercise?

What practical difficulties are there in persuading non-exercisers to take up and continue cycling?

This study was one of a number of key initiatives and research projects which have been commissioned to assist in the successful implementation of the UK National Cycling Strategy. This bold government programme, launched in 1996 and subsequently fully endorsed by the new administration, aims to encourage cycling as a mode of transport and substantially to increase the proportion of journeys in the UK made by cycle.

RECRUITMENT OF SUBJECTS

91 subjects volunteered to participate in the project. They were given initial fitness assessments and completed a detailed questionnaire on their present attitudes and health. Of these 70 continued to a re-examination after approximately six weeks of cycling, and 40 were given a third test and questionnaire after completing a four month total period of cycling.

It was not easy to recruit volunteers for the study. One significant disincentive seemed to be the high level of participation asked of the volunteers. The experiment required people to change long term habits and take up a time-consuming activity. Another exceptional difficulty was political. A General Election was called while recruitment was under way. Because of the involvement of the government in funding the experiment, we had to suspend our activity for the duration of the campaign because it could have been seen as sensitive or controversial by opponents of the government. This meant that a number of promised subjects decided not to wait for us, and began cycling anyway, thereby ruling themselves out of the experiment (which needed non-exercisers). The overall timescale of the project had to be delayed so that it did not finish until early November, when the weather and daylight were less attractive to beginner cyclists.

Once the election was over we made general appeals through local media in Birmingham and Liverpool, and more targeted appeals were made to social groups, employee groups and clients of the new Liverpool Cycle Centre taking up cycling afresh. Even from the targeted groups, which were the more successful, less than 1% of those approached began the study. Of course any of those approached who already took exercise would not have been eligible for the study.

During the course of the study, a number of volunteers retired from the experiment, either formally or by reducing their weekly amount cycled to zero. The reasons cited included ill health and perceived risk of collisions, but more commonly the weather or available daylight were the reported limiting factors. This was particularly the case among volunteers who did not use their bicycles for commuting and whose cycling was confined to the evenings or weekends.

During the recruitment process, we offered some small incentives to potential volunteers, including a free cycle computer, optional on-road cycle training and entry to a prize draw. Of the 91 volunteers to begin cycling, only 3 requested training and around half did not collect a cycle computer, in many cases because they already used one. In general, the incentives appeared unimportant to volunteers, whose decision to take part seemed to be based usually upon perceived fitness gains versus effort required.

PHYSICAL CHANGES

The most important aspect of health related fitness, aerobic fitness, improved in the group as a whole completing at least part of the intervention period. This is the capacity to maintain vigorous exercise without becoming exhausted, and is usually measured on an instrumented bicycle with a progressively increasing load (feeling rather like going uphill into a headwind). The mean improvement was over 11%, those completing the whole trial improving by almost 13%. This compares very favourably with trials of other forms of exercise for previously sedentary populations. The greater part of the improvement in aerobic fitness occurred during the first six to eight weeks of the trial, reflecting the change from a sedentary to a regularly active life style.

A clear 'dose - response' effect was evident for those who cycled 30 km or more per week (the median mileage overall). These volunteers increased their fitness on average by over twice as much as those cycling less per week (17% compared with 8%). If achieved in four or five weekly half-hour sessions, 30 km per week corresponds very closely to the UK Health Education Authority's recommendations for health-enhancing exercise.

Nevertheless, gains in aerobic fitness were still significant for those cycling fewer miles. This implies that even a small amount of regular cycling is directly beneficial for health gain, or that the move from a sedentary life style to one mode of regular exertion makes the individual more disposed to other forms of exercise, such as walking.

As well as the highly significant changes in the aerobic fitness, the subjective response to exertion was improved in the majority of subjects. This was measured using a method developed by Borg, by which the subject picks from a list numbered from 0 to 20, a description of how the exercise felt at its peak.

Leg strength also improved overall, showing a more even progression over the entire trial, about 8% by the end of the first 6-8 weeks and 16% by the final assessment. An even greater dose-response was apparent, 26% improvement for those cycling above the median distance compared with 4.5% for those below.

What are the health implications of the improvements in aerobic fitness? We examined these from the stand-point of the accepted definitions of health-threatening low fitness. It is accepted that the greatest relative risk exists in the lowest 20% of the national population distribution of aerobic fitness, and that risk reduces continuously as one's ranking improves.

We therefore put subjects into categories relating to where they ranked in fitness compared with the whole population, according to a

national survey of physical exercise and health conducted in 1992. Of the 35 subjects who were, at the outset, in the bottom fifth of the national population distribution, all but two had improved their fitness after the first 6-8 weeks. The mean percentile ranking improvement for this group is more than 13 percentage points (from 9.3 to 22.5). Those completing the whole trial moved from a mean of the 31st percentile to the 48th percentile, i.e. from the bottom third of the national fitness distribution to a near-average position.

Body fat was significantly reduced among most of those subjects who were overweight or obese at outset (59% of the participants). The extent of fat loss, typically two to three kilograms of fat mass over the period of the trial, should mean that they achieved a change in energy balance which would lead to long term control of body composition. Only in men was fat loss typically accompanied by a reduction in waist to hip ratio.

Presumably because of the accompanying increase in muscle mass, loss of fat mass was only partially reflected in loss of body weight as a whole. This underlines the undesirability of using weight as the sole criterion of fat loss when there has been a change in physical activity. Some of the subjects who were overweight probably joined the experiment because of their, or their family's, wish for them to become thinner. Although they felt disappointed at the lack of progress in this direction, activity made them fitter and therefore healthier, even though this would not have been apparent from the outside.

CHANGES IN ATTITUDES

By administering a detailed questionnaire before and after the experiment, we also tried to identify changes to the social and psychological factors which might affect people's responses to cycling encouragement programmes.

Almost all of the volunteers were pleased they had started to cycle, with only one volunteer responding to the contrary. Those who cycled to work were significantly more likely than those who commuted by other modes to consider their journey enjoyable ($p < 0.01$ at stage 1 and $p < 0.05$ at stage 2). Approximately 6 in 7 respondents expressed their intention of continuing to cycle in the future.

The distance cycled was positively correlated, though not significantly, with a perceived improvement by the respondents in many of the health aspects of their lives.

The primary reason for not engaging in more physical activity was lack of time. 'Time' was cited almost twice as often as any other single reason. Cycling, which has the potential for being integrated into daily travel, can therefore offer a useful way for people to take beneficial exercise.

The questionnaires revealed a wide range of knowledge, behaviour and attitude changes among the volunteers. Some became enthusiastic regular cyclists. One even became a vociferous cycle campaigner, writing letters to local and even national newspapers calling for more resources for cycling. Others however dropped out or maintained some reservations about cycling despite their improved health.

As cycling is one of the few beneficial activities which can be undertaken by the majority of the population as part of a daily routine, there could be big savings in health service costs if cycling could be actively encouraged. However very few of the subjects appeared to continue regular cycling into the depths of winter at the end of the experiment. The results of the assessments administered on the subjects who stopped regular cycling suggest that health-related fitness soon begins to decline when regular exercise stops. This has serious implications for any cost savings.

Experienced cyclists know that cold or wet weather need not be a serious obstacle if the right clothing and sensible behaviour are adopted. However to an inexperienced cyclist they seem more of a problem. Motor traffic which can be accommodated in daylight becomes more of a perceived threat at night. Therefore there is a continuing need for support, advice and training to help inexperienced cyclists continue their cycling through their first cycling winter.

If some of the barriers identified by the respondents are overcome, cycling could become a realistic preventative measure for Coronary Heart Disease and other illnesses which are related to lack of fitness.

Allott Transportation wish to record their thanks to Dr Mayer Hillman and Bill Tuxworth who contributed their extensive experience to the design of the experiment, as well as many weeks of hard work, as well as to Liverpool John Moores University, the University of Birmingham and the Liverpool Cycle Centre. Dr Alan Nevill undertook the statistical analysis of the results.

The work described in this paper forms part of a wider study on cycling and health undertaken or commissioned by the Transport Research Laboratory with support from the UK Department of the Environment, Transport and the Regions. This study is described in TRL Report 346 'Cycling for a Healthier Nation'.

EXERCISE AND HEART DISEASE: THE LONGEVITY OF THE LONG DISTANCE CYCLIST

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EXERCISE AND HEART DISEASE: THE LONGEVITY OF THE LONG DISTANCE CYCLIST

Regular exercise gives some protection from coronary heart disease (CHD) and cyclists have been shown to have less CHD. Regular exercisers have been found to have an increase in lifespan of 1 - 2 years. In order to see whether this applies to cyclists, over 300 obituaries of members of the Cyclists' Touring Club (c.45,000 members) have been reviewed. The mean age of death of male cyclists (75.37) was higher than that for the life expectancy of the general UK population (73). This supports the view that regular cycling is associated with a reduction in all cause mortality. Study of the obituaries suggested that most of the members remained physically active in their later years.

BEWEGUNG UND HERZERKRANKUNGEN: DIE LANGLEBIGKEIT VON LANGSTRECKEN-RADFAHRERN

Regelmäßige Bewegung schützt bis zu einem gewissen Grad vor Koronarerkrankungen, und es wurde tatsächlich nachgewiesen, daß Radfahrer in geringerem Maße unter Koronarerkrankungen leiden. Es hat sich gezeigt, daß Menschen, die regelmäßige Bewegung machen, ein bis zwei Jahre länger leben. Um festzustellen, ob dies auch für Radfahrer gilt, wurden über 300 Todesanzeigen von Mitgliedern des Cyclists' Touring Club (ca. 45.000 Mitglieder) analysiert. Das durchschnittliche Sterbealter der männlichen Radfahrer (75,37) war höher als die allgemeine durchschnittliche Lebenserwartung der britischen Bevölkerung (73). Dies spricht für die Ansicht, daß regelmäßiges Radfahren die Mortalität aus sämtlichen Ursachen verringert. Das Studium der Todesanzeigen zeigte außerdem, daß die meisten der Mitglieder bis ins hohe Alter körperlich aktiv geblieben waren.

VADBA IN BOLEZEN SRCA : DOLGO ŽIVLJENJE DOLGODISTANČNIH KOLESARJEV

Redna vadba nudi nekaj zaščite pred koronarno srčno boleznijo (CHD) in pokazalo se je, da imajo kolesarji manj te bolezni. Odkrito je, da redne vadbe podaljšujejo življenjsko dobo za 1 do 2 leti. Da bi ugotovili, če se to nanaša tudi na kolesarje, smo pregledali preko 300 osmrtnic članov Kolesarske zveze (le-ta ima približno 45.000 članov). Povprečna starost smrti moških kolesarjev (75,37) je bila višja od življenjske dobe splošne populacije Velike Britanije (73). To pa podpira dejstvo, da je redno kolesarjenje povezano z zmanjševanjem smrtnosti v vseh primerih. Študija osmrtnic je tudi nakazala, da je večina članov ostala fizično aktivna še v svojih poznih letih.

INTRODUCTION

Physical inactivity is an important risk factor for coronary heart disease (CHD),¹, as it contributes to obesity, hyperlipidaemia, insulin resistance and changes in blood clotting factors. There is evidence, going back 45 years, that regular physical exercise retards the development of clinical CHD, ^{2,3}. Given that CHD is responsible for about one in four deaths in the UK, it might be expected that people who take exercise might have longer life spans than the inactive. This idea is supported by the work of Paffenbarger on the Harvard Alumni which confirms that the regular exercisers in this study are living over two years longer mainly due to a reduced incidence of CHD,⁴. Cycling is an excellent form of aerobic exercise and it has been shown that regular cyclists have a reduced prevalence of clinical CHD,^{5,6}, and, in a small series, a reduced amount of CHD found at autopsy,⁷. Morris concluded that "— vigorous exercise is a natural defence of the body, with a protective effect on the aging heart against ischaemia and its consequences", ⁶. Therefore it is reasonable to ask whether cyclists enjoy any long term survival advantage but a search of MEDLINE and SPORT Discus 1975-98 found little published evidence on this point. This is a report of a study of the survival of members of the Cyclists Touring Club (CTC).

METHODS

The initial source of data was the obituary notices appearing in "Cycletouring and Campaigning" for the years 1988 - 98. This journal is the official organ of the CTC, a national organisation of some 45,000 members. The name, sex and age at death were abstracted as well as any details of the place, date and cause of death. Some obituaries did not give the age but these gaps were filled, as far as possible, by reference to the indices of the Register of Deaths which are available on microfiche at some public libraries. This was not possible in the case of those members who died outside the U.K. One basis for comparison consisted of published estimates of the expectation of life in England and Wales, ⁸. In addition, in 128 cases members' dates of death were checked in the Register and at the same time, the next adult death of the same sex was used as a control; this comparison was limited to England and Wales. The Registers are compiled alphabetically. Means, medians and significances were calculated using a standard statistical software package (C-Stat for Windows, Cherwell Scientific).

RESULTS

A total of 304 male and 42 female obituaries could be analysed; the respective numbers of controls were 132 and 16. The main results are shown in Table I. which gives a comparison with the life expectancy as published in The Health of the Nation, ⁸. The male CTC members appeared to have had a gain of over two years as compared with the general population but the women had no advantage. When the members who had died in England and Wales were compared with controls obtained as described above, the members had a similar two year advantage which was statistically significant (Table II). The number of females available was too small for useful comparison. When the males alone were compared with controls there was a difference in the distribution of the ages of death and the male members had a median age of death of 79 years as compared with 72.5 for the controls.

TABLE I

SURVIVAL OF MEMBERS OF THE CTC COMPARED WITH LIFE EXPECTANCY AT BIRTH (1992)

	MALES	FEMALES
HEALTH OF THE NATION	73	79
CTC MEMBERS - MEANS	75.37 SD - 13.90	75.67 SD - 13.64
MEDIANS	79	80
n	304	42

TABLE II

SURVIVAL OF 128 MALE CTC MEMBERS (E & W) COMPARED WITH PAIRED RANDOM CONTROLS

	MEMBERS	CONTROLS
MEANS	74.91	72.56
95% CI	72.47 - 77.36	70.15 - 74.97
MEDIANS	80.00	74.50

Mann-Witney U $p = 0.0302$

DISCUSSION

The finding that those male CTC members who had obituary notices survived over two years longer than expected and had a similar advantage over the controls is in good agreement with the findings in the Harvard Alumni, 4. Paffenbarger et al. recruited 16,936 subjects, aged 35 to 74, estimated their individual energy expenditures and followed them up for 12 to 16 years. A total of 1413 alumni died during follow-up (1962 to 1978) and, by the age of 80, the amount of additional life attributable to adequate exercise, as compared with inactivity, was one to more than two years.

As arterial disease is commoner in men than in women it might be expected that the men might benefit more from exercise which is what the results show. Exercise also benefits women but, in the present study, the women showed no advantage in survival. However, the number of obituaries of female members was much smaller and they were skewed by a number of early deaths, mainly from cancer.

A survey of CTC members showed that only 8% were regular riders on club runs and that the mean annual mileage was 2,000 (3,200km). Nearly 20% cycled less than 800km per annum but even this represents a much higher level of physical activity than that of the majority of British adults. The Allied Dunbar National Physical Fitness Survey showed that "one third of men and two thirds of women would be unable to continue walking at a reasonable pace (about 4.8 kph) up a 1 in 20 slope without becoming uncomfortably breathless",⁹ so that it may be concluded that even the less active CTC members are much fitter than the general population.

Members of the CTC are largely leisure and utilitarian cyclists although many also take part in amateur competitions but the survival of members seems to have been very different from the findings of de Mondenard who studied 28 winners of Tour de France, 10. In these top professional cyclists the mean age at death was 60.1 years compared with a life expectation in France of 72.3 in 1988 and 60 years in 1946; in 1900 the life expectation was only 47 years. The survival of winners in 1903 - 1939 was 63.9 years with 18.5% dying before the age of 60 but, in the period 1947 - 1990 26.8% had already died before the age of 60 years. De Mondenard blames this reduction in survival on the pressures of commercialism which has resulted in a very full racing calendar, huge mileages and, in some cases, on the use of drugs. Professional racing cyclists are not really comparable with utilitarian and recreational cyclists who have a more leisurely approach but who may still run up considerable annual mileages. De Mondenard's series is too small to draw any firm conclusions about longevity of cyclists in general but his main thrust is to draw attention to the adverse effects of commercial pressures rather than to assess survival itself.

There is a serious objection to using obituary columns as source of data. Obituaries tend to be written about the famous, the infamous and the very old. Furthermore, younger members who become ill may have left the club and died early without their deaths being recorded so that the data is likely to be slanted towards the very healthy and active. It is to be hoped that the data are not typical of CTC members in general as 8.7% of deaths in the series were due to road traffic accidents which is more than four times that in the general population. Even if one allows for members' high mileages, it seems unlikely that this accident rate could be genuine and it must be concluded that the obituaries are not representative of the membership as a whole. Nevertheless, the present series supports the idea that regular cyclists tend to have long and healthy lives. A review of the contents of the obituary notices showed that most of the members recorded not only lived long lives but also that they remained active into old age which may be regarded as being more important than longevity itself. The findings are encouraging but they fall short of confirming the idea that "—for every two hours spent cycling an hour could be added to life expectancy"¹¹, and, due to the biases inherent in data of this type, a relative increase in the longevity of cyclists is a matter which is still unproven.

There are two ways in which this could be resolved. It would be possible to take a sample of the members, preferably with non-cycling controls, and follow them up to death whether or not they remained club members. This would be a long-term project but it could provide a definitive answer. The second, quicker, method would be to identify a sample of the membership at some date in the past, say 1925, and then follow up this group to assess their survival. Either method would take time and money but the data presented provide a *prima facie* case for mounting such an effort.

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PEDDLING HEALTHY TRANSPORT

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ENGLISH

PEDDLING HEALTHY TRANSPORT

This paper will address why health authorities in Australia need to recognise the benefits to health from integrating bicycle use into daily lifestyle, explore the barriers to cycling that currently exist within the health system and highlight the successful healthy transport initiatives that are occurring at local level.

There is much evidence to support this innovative approach to the health problems facing Australia, but still barriers exist that prevent positive change from occurring. I will outline the successful and innovative health promotion strategies that I have undertaken in my work as a Community Nurse in rural Australia to encourage the use of bicycles as healthy transport.

DEUTSCH

EIN FELDZUG FÜR GESUNDE FORTBEWEGUNG

Dieses Referat erklärt, warum die Gesundheitsbehörden in Australien die gesundheitlichen Vorteile, die eine Integration des Radfahrens in den täglichen Lebensstil hätte, anerkennen sollten. Außerdem werden die Vorbehalte, die gegenwärtig im Gesundheitssystem in Bezug auf das Radfahren bestehen, untersucht und erfolgreiche Kampagnen zur Förderung gesunder Fortbewegungsarten auf lokaler Ebene vorgestellt.

Es gibt viele Beweise für die Nützlichkeit dieses innovativen Ansatzes zur Lösung der in Australien herrschenden Gesundheitsproblematik. Dennoch gibt es immer noch Barrieren, die sich einer Veränderung zum Besseren in den Weg stellen. Ich werde die erfolgreichen und innovativen Strategien zur Verbesserung der Gesundheit vorstellen, die ich im Rahmen meiner Arbeit als Gemeindeschwester in einem ländlichen Gebiet Australiens angewandt habe, um zum Gebrauch des Fahrrads als gesundem Beförderungsmittel zu ermutigen.

SLOVENSKO

NEPOMEMBEN ZDRAVI PREVOZ

Ta prispevek se obrača na zdravstvene oblasti v Avstraliji, na njihovo potrebo po spoznanju koristi na zdravje, če kolo dopolnujemo z vsakdanjim življenjskim stilom. Potrebno je tudi raziskati ovire, ki se na splošno nanašajo na kolesarjenje v okviru zdravstvenega sistema. Poudariti je potrebno iniciative uspešnega zdravstvenega prevoza, ki se pojavljajo na lokalni stopnji.

Mnogo dokazov je, ki podpirajo ta inovativni pristop zdravstvenih problemov, s katerimi se srečuje Avstralija, čeprav še vedno obstajajo ovire, ki preprečujejo pozitivne spremembe nastalega stanja. Opisala bom uspešne in pospešene inovativne zdravstvene strategije, s katerimi sem se ukvarjala, ko sem delala kot družbena medicinska sestra v podeželskih območjih Avstralije, ko sem vzpodbujala uporabo koles kot zdravega prevoza.

WEDNESDAY

PEDDLING HEALTHY TRANSPORT

Federal and State health departments in Australia have acknowledged the importance of promoting physical activity, in particular, "moderate intensity physical activity", done frequently (almost every day) for at least 30 minutes. (NSW Health 1997) This is due to the high costs of illness associated with sedentary lifestyles, the most common cause of death and disability in Australia being Coronary Heart Disease (CHD) resulting from physical inactivity. In 1996, there were almost 30,000 deaths from CHD, 13,000 deaths from Cerebrovascular disease and over 9,000 deaths from cancers. (NHF 1996) Since 1980, the incidence of overweight and obesity has increased, with women on average 3kg heavier and men 1.7kg heavier in 1989. (SAAW 1997) The rising prevalence of weight problems in the Australian population, 55.2% of adults overweight and 18.3% obese, (National Diabetes Strategy 1998) combined with increasing levels of physical inactivity are the contributing factors to more cases of Non Insulin Dependent Diabetes Mellitus in Australia, at a rate of approximately 25,000 cases per year from 1990 to 2010. (Diabetes in Australia 1996) Evidence shows that modifiable risk factors (moderate intensity physical activity, good nutrition and weight reduction) offer the potential for successful intervention to prevent NIDDM. (National Diabetes Strategy 1998)

Dependence on motorised transport is the primary cause for the current sedentary lifestyle and has had the negative effect of individuals exercising much less than in previous generations. Changes in lifestyle have meant the opportunities for physical activity have been reduced, so, instead of riding a bike or walking, the car has become the transport of choice. Physical inactivity is prevalent among Australians, with 37% of people over the age of 45 years not performing any regular exercise (Diabetes Strategy 1998) and at least 55% of the total population have insufficient exercise to gain any appreciable health benefit. (Pedalling Health 1996) Comparisons between the UK and The Netherlands, show that the levels of obesity are rising in the UK and not in The Netherlands. The main difference being that 60% of Dutch people cycle to work each day and only 5% of the British use the same form of transport. (NH&MRC 1997)

Estimates put the cost of preventable disease at \$6.5 million dollars a day in 1983 dollars. (Dr M. Wooldridge, 1997) There can be \$59 million in healthcare expenditure and 2,300 years of life saved by reducing the prevalence of obesity in Australia by 20 percent by the year 2000, in line with the National Health Goals and Targets. (NH&MRC 1997) Consider also, the Global Burden of Disease and Injury Report (WHO 1997) prediction: deaths in 2020 will be due to 1. Ischaemic Heart Disease, 2. Unipolar major depression and 3. Motor vehicle accidents, if current lifestyle patterns continue. It is interesting to note that in 1990, the ratings for these were 5, 4, and 9 respectively.

To increase the physical activity levels of the general population requires environmental, social and cultural changes that encourage bicycle use as part of daily lifestyle as incidental activity; exercise programs are useful but 'incidental activity' should be increased. (SAAW 1997) In 1994, the Commonwealth Department of Health identified that State and Local Governments should investigate structural changes which will encourage people to walk or cycle instead of using motor transport whenever possible. Possibilities are car-free areas in cities (except for the disabled or elderly) and strategies to encourage cycling instead of driving.

SO, IS THE HEALTH SECTOR ENCOURAGING PHYSICALLY ACTIVE TRANSPORT?

Despite Federal and State health adopting policies that encourage incidental physical activity based on cycling for transport, most health professionals and the majority of health facilities are not actively supporting bicycle use.

A study of 150 GPs in South Australia explored the amount and types of advice they provided to their patients about physical activity. It found that advice on physical activity was given less often than advice about other lifestyle factors for CHD, only half the GPs recommended exercise to the patients and less than a quarter actually did this routinely. Not one GP recommended cycling as exercise. The results of research conducted during 1997 examining all the hospitals in Adelaide, South Australia, determined that these health facilities are not sufficiently aware of the link between healthy exercise and transport. Whilst staff interviewed were aware that exercise is health promoting, and over 50% alleged the belief that hospitals have a major role to play in the promotion of healthy lifestyles for staff and clients, few have translated this into corporate policy and thence into strategies and tangible outcomes. (Owen, Scullion et al 1997)

Health departments continue to favour organised physical activity, walking and sport even though research that shows cycling is more beneficial to health than slow walking, in fact even the most gentle cycling is strenuous exercise for a sedentary population. (BMA 1992) Approximately 20% of people in NSW do not identify with 'sport' as physical activity (NSW Health 1997), thereby making cycling for transport an attractive option for incidental physical activity.

LOCAL HEALTH PROMOTION INITIATIVES

Lack of bicycle facilities, increasingly hostile road environment and the urban myth that cycling is dangerous, makes bicycle use less likely to be the activity of choice for most sedentary Australians, therefore creating supportive environments is imperative for successful bicycle initiatives. An important aspect of my role as a Generalist Community Nurse - a nurse whose work is within a primary health care framework and the main functions being those of health promotion and primary prevention (MWAHS 1998), is to encourage bicycle use as healthy transport within a supportive environment. Some of the innovative healthy transport activities occurring in Wallerawang, Portland and Lithgow (NSW) highlight the important contribution that bicycle use in preference to car use can make to both public health and the health of the individual.

COMMUNITY DEVELOPMENT

- Trek 'child trailer' available for loan from the Community Health Centre for families wanting to adopt a healthy transport lifestyle.
- 'Bike Week' promotion each year in September;
- GLADBAG (Greater Lithgow and District Bicycle Advocacy Group) works closely with local council to develop the bicycle plan, a safer routes to school program, bicycle parking facilities and other strategies to encourage a bicycle friendly traffic environment;
- 'Back to Bikes' regular bicycle rides for the wider community;

HEALTH INITIATIVES

- 'The Pedal Prescription' An information leaflet for health professionals with simple health and cycling messages, this innovative leaflet is featured on the website for the Strategy for Acting on Australia's Weight;
- Health workers lead by example and cycle instead of driving for work purposes;
- 'pedal to breakfast' Heart Week promotion;

SCHOOL INITIATIVES

- 'Pedal to Primary' held at Wallerawang and Portland Schools;
- 'Dinki Di Dinky Day' bicycle safety and maintenance day at Blinky Bill pre-school in Portland, NSW.

MEDIA STRATEGIES

- GLADBAG column A cyclists' column appearing each month in the Lithgow Mercury;
- "Pedalling Profile" appears each month in the Lithgow Mercury.
- Regular press releases to the local paper (Lithgow Mercury) on issues related to good health and regular bicycle use.

The success of these health promotion initiatives can be attributed to the excellent intersectoral relationship that has developed between health, education, local government, the Roads and Traffic Authority and the media.

CONCLUSION

Health promotion is often overlooked and under resourced because the long term nature of the benefits make assessment difficult. The under resourcing of the health promotion sector renders it less powerful than sectors responsible for more conventional medical interventions and less influential than other interest groups related to transport and transport related manufacturing industries. (Pedalling Health 1996)

The role of all health workers to promote moderate, habitual, non-seasonal exercise such as walking or cycling can produce health gain for that individual and for the community at large in the form of reduction in health care costs. (Owen, Scullion et al 1997) Integrating bicycle use into daily lifestyle is an excellent example of how health departments can change their current focus from clinical and curative services to that of prevention of ill health, as encouraged in the Ottawa Charter 1986.

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INTEGRATED QUALITY MANAGEMENT FOR CYCLE TOURISM THE EXAMPLE OF THE „TAUERN BICYCLE PATH“

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INTEGRATED QUALITY MANAGEMENT FOR CYCLE TOURISM THE EXAMPLE OF THE „TAUERN BICYCLE PATH“

In the early 90s, the great success of the Danube bicycle route persuaded the tourism managers of Salzburg to design and market a long-distance bicycle route in the Province of Salzburg. Even though Salzburg had no tradition of cycle tourism at all and cycling is not very popular among the citizens themselves, the „Tauern Bicycle Path“ project remarkably soon became a huge success.

Along the two most important rivers of the region, Salzach and Salach, existing secondary road networks and cycle routes created in the course of power station construction projects were interconnected and uniformly marked. Thus a route of more than 400 km was created which links Krimml, Zell am See and Salzburg and ends at the mouth of the river Inn and Passau.

Most hotels and boarding houses in the towns and villages along the route were totally surprised when the tourism association of the Province of Salzburg proposed a „Declaration of Cycle-Friendly Establishments“.

INTEGRATED QUALITY MANAGEMENT FOR CYCLE TOURISM THE EXAMPLE OF THE „TAUERN BICYCLE PATH“

Der große Erfolg des Donauradweges veranlaßte Anfang der neunziger Jahre Salzburgs Tourismusmanager, eine große Radroute im SalzburgerLand zu planen und zu vermarkten. Obwohl es keinerlei Tradition von Fahrradtourismus gab und auch die Salzburger selbst nur in sehr geringem Maß mit dem Fahrrad in ihrem Land unterwegs waren, entwickelte sich das Projekt Tauernradweg in erstaunlich kurzer Zeit zu einem Riesenerfolg.

Dem Lauf der beiden wichtigsten Flüsse Salzach und Saalach folgend wurden vorhandene sekundäre Straßennetze sowie im Rahmen des Kraftwerksbaus entstandene Fahrradwege vernetzt und einheitlich beschildert. So entstand eine Route von insgesamt mehr als 400 Kilometern, die von Krimml über Zell am See nach Salzburg weiter an die Inn-Mündung und nach Passau führt.

Die meisten Hotels und Pensionen in den Orten entlang des Tauernradweges waren anfangs ungläubig erstaunt, als die Salzburger Land Tourismus Gesellschaft eine Deklaration „fahrradfreundlicher Betriebe“ vorschlug.

DEUTSCH

Gleichzeitig wurde mit dem Verlag Schubert & Franzke der erste Tauernradwegführer produziert, der neben touristischen Informationen und ausgezeichneten Landkarten ein Verzeichnis eben jener fahrradfreundlichen Betriebe enthielt.

Mehr als 250 Journalisten aus ganz Europa und Übersee wurden seither von Salzburgs Tourismuswerbern an den Tauernradweg gelotst, jährlich rund 70.000 Touristen bevölkern die mittlerweile immer besser ausgebauten Route jedes Jahr zwischen April und Oktober.

Der Tauernradwegführer wird ca. 20.000mal im Jahr verkauft, die Internet website www.radtouren.at (Radtouren in Österreich mit link auf den Tauernradweg) registriert zehntausende Zugriffe - und niemand wundert sich mehr, daß man im SalzburgerLand auch radfahren kann.

SLOVENSKO

INTEGRIRANO UPRAVLJANJE KAKOVOSTI V KOLESARSKEM TURIZMU PRIMER "TAUERNKE KOLESARSKE POTI"

Velik uspeh Donavske kolesarske poti je na začetku 90-ih let poskrbel za začetek načrtovanja in trženja velike kolesarske poti v deželi Salzburg. Čeprav tukaj ni bilo nikakršne turistične kolesarske tradicije in so tudi prebivalci Salzburga redko kolesarili, je projekt Tauernska kolesarska pot, v presenetljivo kratkem času doživel ogromen uspeh.

Sledeč toku dveh najpomembnejših rek Salzach in Saalach so povezali in s tablamı enotno označili že obstoječe sekundarno cestno omrežje, kot tudi v okviru gradnje elektrarne nastale kolesarske poti. Tako je nastala pot, ki meri skupaj več kot 400 km in vodi od Krimmla preko Zell am See do Salzburga in dalje do ustja Inna ter mesta Passau.

Večina hotelov in penzionov v krajih ob Tauernski kolesarski poti je bila sprva nejeverno začudena, ko je Družba za salzburski podeželski turizem predlagala deklaracijo "kolesarjem- prijaznih dejavnosti".

WEDNESDAY

BICYCLE TOURING IN AMERICA

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Tom Pendleton is the director of The Wayfarers, a non-profit bicycle touring service, based in Washington, DC. He has previously been the bicycle coordinator for the cities of Washington, DC, and Ann Arbor, MI, where he was also chair of the Non-Motorized Transportation Advisory Committee to the Michigan Department of Transportation and the co-founder and first chair of PALM (Pedal Across Lower Michigan, a week-long, cross-state tour). Before that he had been a bicycle consultant and executive director of the American Youth Hostels council in Philadelphia. He has been planning bicycle tours since 1967. He now spends over one-third of his time in Europe, working on tours and enjoying the better life there.

ENGLISH

BICYCLE TOURING IN AMERICA

"Americans don't bike!" This is the standard refrain heard throughout Europe whenever the issue of Americans touring by bicycle arises. How true is this? The author has interviewed leaders in the field of bicycle touring in the United States and presents here his preliminary findings in recent trends in bicycle touring there. In general, there is agreement that the industry is not helping - and is probably hindering - the development of this activity. Mass tours, usually lasting an entire week, constitute the majority of perceptible tourers, though there is growth in the touring book and map field. The question is raised as to how much touring can be developed in this auto-dominated arena without attendant infrastructure support.

Note that this is a continuing study, and more data and trends will be presented at the Poster Workshop Session G3 at the VeloCity'99 conference.

RADTOURING IN AMERIKA

„Amerikaner fahren nicht mit dem Rad!“ Dies ist ein Standardsatz, den man in ganz Europa zu hören bekommt, wann immer von Amerikanern und Fahrradtouring gesprochen wird. Wie wahr ist diese Aussage? Der Autor hat führende Persönlichkeiten im Bereich des Fahrradtouring in den Vereinigten Staaten befragt und präsentiert an dieser Stelle seine vorläufigen Ergebnisse bezüglich der jüngsten Tendenzen des Fahrradtourings in Amerika. Im allgemeinen herrscht Übereinstimmung darüber, daß die Industrie die Entwicklung dieses Sports nicht fördert und wahrscheinlich sogar verhindert. Der Großteil des Fahrradtourings beschränkt sich momentan auf Massenveranstaltungen, die für gewöhnlich eine ganze Woche dauern, doch besteht in zunehmendem Maße auch Nachfrage nach Touringbüchern und -karten. Es wird die Frage aufgeworfen, in welchem Ausmaß das Radtouring in diesem KFZ-dominierten Land sich ohne begleitende Infrastrukturmaßnahmen entwickeln kann.

KOLESARSKA POTOVANJA V AMERIKI

"Američani ne marajo koles!" To je standardni refren, ki ga lahko slišimo po Evropi vedno, ko se pojavi vprašanje potovanja Američanov s kolesom. Koliko resnice je v tem? Avtor je intervjuval vodilne na področju kolesarskega potovanja v Združenih državah ter tako tu predstavlja uvodne iznajdbe zadnjih trendov tukajšnjih kolesarskih potovanj. Na splošno gre za dogovor, da industrija ne pomaga in najverjetneje ovira razvoj te aktivnosti. Množična potovanja, ki ponavadi trajajo celi teden, predstavljajo glavino dojemljivih popotnikov, čeprav je viden tudi porast popotniških priročnikov in kart. Postavlja se vprašanje, koliko potovanj se lahko razvije na prizorišču avtomobilistične prevlade, brez spremljajoče infrastrukturne podpore.

BICYCLE TOURING IN AMERICA

"Americans don't bike!" This is the standard refrain heard throughout Europe whenever the issue of Americans touring by bicycle arises. As told me by a waitress in Noordwijk (NL), "They get off the bus, they take a few pictures, and they get back on the bus." The Swiss National Tourist Office could produce literature promoting the new national bicycle touring route system in one language beyond their three national ones, and they chose Dutch! When asked why not in English, they responded: the English, Americans, and Australians don't bike. (This ignores the point that, as all the Dutch cycle-tourists I met in Switzerland stated, all Dutch read English anyway!)

Apparently this attitude extends to the American bicycle industry, as well. It is quite unusual to find a touring bicycle for sale through traditional retail outlets in America. (Specialty touring bicycles may be purchased for over \$2000 (> Euro 1670) on special order from individual craftsmen.) The industry claims that "Traditional road bikes (27-in. wheels) now make up less than 1% of the market."¹ Much of this may be a problem of definition. For example, the National Sporting Goods Association - currently the most reliable data source - reports that bicycle participation dropped 20% during 1996 and 1997. However, upon investigation, it appears that this figure only applies to the use of bicycles with dropped handlebars; flat, mountain-bike-style-handlebar bike use is still climbing. In Wisconsin, where the state parks office tracks usage figures closely, there is reported an 8-10% increase in general biking consistently over the past 7-10 years, with 1 in 3 citizens having biked.²

"The bicycle touring business is alive and well in America," says Jay Townley, a private consultant with The Bicycle Council, and one of the most respected voices in the field. He continues, "There is real potential and a lot of growth, but not involving the industry...Quite frankly, the bicycle industry doesn't care...The country is underserved [by the industry]...The market is going for comfort; the industry is still going for speed."³ He estimates that there are perhaps over a million American participants a year in bicycle touring, and that 33 - 40% of these are going abroad.

The big participation in the United States appears to be in organized mass tours. There are innumerable small (and some large) touring companies, such as mine, but they primarily specialize in groups of about 10 people. Thus the mass tours vastly outdraw them in sheer numbers of participants. Morton Archibald, of the BAMA tour (in Alabama - not normally

¹ National Bicycle Dealers Association 1998-99 STATPAK

² conversation with Jeff Prey of Wisconsin State Parks, 22 January 1999.

³ Conversation 15 January 1999.

considered a state conducive to bicycling), reported on the results of a survey of participants at the fall, 1998, meeting of the National Bicycle Tour Directors Association: 65 tours were included, with 96,000 participants, who cycled 17.9 million miles (28.6 million km), or 715 times around the world in the single season!⁴

June Thaden, a director of the League of Michigan Bicyclists' Shoreline tours - which had 836 participants in three tours of about one week in length in 1998 - did an economic survey of the expenditures connected with the tours. She estimates that \$741,466 (Euro 617,888) was spent by the organizers setting up and operating the tours and the participants travelling to and on the tours. It is common to multiply by a factor of at least 3 to measure the economic impact on an area (to reflect the amount further spent by those receiving the initial payments), making the total impact in a sparsely populated area perhaps \$2,224,400 (Euro 1,853,665)!⁵

Thus we see that the mass tour market in America is indeed alive and well - and having an important economic impact on the communities it touches. This is only addressing overnight tours; in fact, it mostly represents week-long tours. There are hundreds of substantial one-day tours offered by clubs and other organizations throughout North America, with the biggest being Le Tour de l'Ile, Velo Quebec's Montreal extravaganza, limited to 45,000 participants!

Figures for independent bicycle touring are, of course, much harder to come by. As we have seen, it is impossible to rely on the industry's sales figures for guidance. (This has become even truer as experienced tourers have found that it is often better to update the components on their older machines than to purchase new machines.) There are several indicators which are favorable. The number of overnight lodgings which promote or otherwise cater to touring cyclists is growing. For example, in California a number of private hostels have sprung up where Hostelling International's American affiliate has been slow to act; it is now possible to cycle along the Pacific Coast Bike Route between San Francisco and San Diego - a trip of perhaps three weeks - with hostel-type accommodations at the majority of overnight stops. So-called "bed-and-breakfast" establishments (in the US, really fancy inns) are promoting themselves as cyclist-friendly in several places, most notably in Vermont. Governments are getting into the act: having learned that Vermont makes more money from bike touring than from maple syrup, Pennsylvania is trying to establish a series of cross-state bicycle routes. How much these efforts will work is yet to be seen. Pennsylvania, for example, is trying to set up this system in a very mountainous state with narrow, heavily used roads, without spending money on the cycling infrastructure! How much promotion there will be is also still in doubt. There are no indications that the state is even looking at the phenomenal success of the Swiss national bicycle touring route system, let alone learning from it.

Wisconsin has heavily invested in trails, particularly converting abandoned railways into trails for bicycling, hiking, cross-country skiing, and snow-mobiling. There it is necessary to purchase a pass to use the trails, giving us some data. In 1998, they sold 21,925 day passes and 24,175 annual passes, which are increases of 7% and 26%, respectively, over the previous year. (This yielded a revenue approaching \$400,000 (> Euro 300,000).)

Finally, sales of touring books and maps are up - though still not approaching European levels. More data will be available on this in the formal presentation.

So, is America going into bike touring in a big way? The answer appears to be: somewhat yes, but mostly no. As Jay Townley said, "There is real potential," but it is nowhere near to being fulfilled. The development of mass, cross-state tours is a hopeful sign, but the transition to further independent touring is not occurring. Will efforts such as Pennsylvania's, to at least map existing routes, have a serious impact? Or will it be necessary to develop a supportive infrastructure, as has been the case everywhere else? Will Americans get over their aversion to taxes for anything other than military and highways so as to provide a better life and an economic stimulus to remote areas? In our lifetime?

⁴ Reported by June Thaden, past president of the League of American Bicyclists, 21 January 1999.

⁵ Ibid.

SMALL TOWN, BIG IDEAS: DEVELOPING CYCLE TOURISM IN BRITAIN'S SMALLEST TOWN

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SMALL TOWN, BIG IDEAS: DEVELOPING CYCLE TOURISM IN BRITAIN'S SMALLEST TOWN

Llanwrtyd Wells is regarded as Britain's smallest town. Located in mid-Wales, amongst hills and forests, the local economy is based on farming and tourism. As farming incomes decline, cycle tourism is being seen as one way of sustaining jobs and services.

Hosting events such as 'man versus horse versus bike', Llanwrtyd Wells is already popular with outdoor enthusiasts. In 1997 the community initiated a study to look at further development of cycling and green tourism. They had big ideas for a small town.

This paper looks at the creative ideas and the outcomes of the study, and reviews progress during the first year of implementation.

KLEINE STADT, GROSSE IDEEN: DIE ENTWICKLUNG DES FAHRRADTOURISMUS IN GROSSBRITANNIENS KLEINSTEN STADT

Llanwrtyd Wells gilt als Großbritanniens kleinste Stadt. Die Wirtschaft dieser zwischen Hügeln und Wäldern in der Mitte von Wales gelegenen Stadt stützt sich auf Landwirtschaft und Fremdenverkehr. Während die Einkommen aus der Landwirtschaft zurückgehen, wird der Fahrradtourismus als eine Möglichkeit zur Erhaltung von Arbeitsplätzen und Dienstleistungen betrachtet.

Als Ort von Veranstaltungen wie „Mensch gegen Pferd gegen Fahrrad“ hat Llanwrtyd Wells bei enthusiastischen Outdoor-Sportlern bereits Beliebtheit erlangt. 1997 initiierte die Gemeinde eine Studie, um Näheres über die weitere Entwicklung des Fahrradtourismus und des grünen Tourismus zu erfahren. Man hatte große Pläne für eine kleine Stadt.

Dieses Referat beschäftigt sich mit den kreativen Ideen und den Ergebnissen der Studie und analysiert den Fortschritt, der während des ersten Jahres ihrer Umsetzung erzielt wurde.

MAJHNO MESTO, VELIKE IDEJE : RAZVOJ KOLESARSKEGA TURIZMA V NAJMANJŠEM BRITANSKEM MESTU

Llanwrtyd Wells je smatran kot britansko najmanjše mesto. Le-to je locirano v Mid-Walesu, med hribi in gozdovi, tako da lokalno gospodarstvo bazira na kmetijstvu in turizmu. Glede na to, da se zmanjšujejo kmetijski prihodki, postaja kolesarski turizem ena od možnih poti ohranjanja služb in uslug.

V Llanwrtyd Wellsu prirejajo prireditve, kot so "človek proti konju proti kolesu"; le-te pa so postale znane tudi zunanjim navdušencem. Leta 1997 je skupnost pričela s študijo nadaljnjega razvoja kolesarjenja in zelenega turizma. Imeli so velike ideje za tako majhno mesto.

Prispevek se osredotoča na te kreativne ideje in izide študije ter preiskuje napredek med prvim letom izvrševanja.

ENGLISH

DEUTSCH

SLOVENSKO

SMALL TOWN, BIG IDEAS: DEVELOPING CYCLE TOURISM IN BRITAIN'S SMALLEST TOWN

PART 1: SMALL TOWN

Introduction

Llanwrtyd Wells is a little Welsh town that likes to think big. Regarded as Britain's smallest town, it has a population of about 600 and is located amongst the Cambrian mountains of mid-Wales. River valleys, forests and hills provide an attractive backdrop to the town whose buildings cluster around the main road and bridge across the River Irfon.

Farming, forestry and tourism form the basis of the local economy. 'Green' tourism has a long history in Llanwrtyd Wells, starting with the discovery of natural springs over 200 years ago. The opening of a railway line in 1868, linking Llanwrtyd Wells to South Wales and Central England, boosted the development of hotels and other facilities for visitors to the spa town.

As the number of visitors to the town declined during the early part of this century, another form of 'green' tourism was developed: pony trekking holidays. Llanwrtyd Wells proved an ideal location with its quiet byways and bridleways. However, pony-trekking holidays declined in popularity during the 1970s when cheap foreign holidays became available.

However, 'green' tourism continued in Llanwrtyd Wells, this time taking the form of an annual series of events, ranging from hill walking and mountain biking competitions to 'bog snorkelling' and a 'man versus horse versus bike' race. These events take place over weekends throughout the year. Although they are very popular, the events tend to concentrate visitors on certain weekends whilst at other times of the year, hotels, hostels and local shops have low levels of custom.

The development of Llanwrtyd Wells as a centre for cycle tourism was seen as a way of sustaining local services and jobs all the year round. This became even more important as instability in the farming sector continued.

The Study

In 1997, the local community initiated a study to assess the feasibility of the development of Llanwrtyd Wells as a centre for cycling and green tourism. Consultants Allott Transportation and Les Lumsdon were commissioned to undertake the study by the local authority, Powys County Council, together with Llanwrtyd Wells Town Council.

The study therefore needed to address a number of important questions:

- Is there a demand for cycle tourism?
- Does Llanwrtyd Wells have the resources for cycle tourism?
- What actions are needed to develop cycle tourism in Llanwrtyd Wells?

In order to obtain answers to these questions, the consultants undertook detailed surveys and widespread consultation with the local community and local organisations. Data and information on cycle tourism in Britain was collected and a survey of over 30 businesses in and around Llanwrtyd Wells was carried out. Many good ideas came out of the business survey and the majority of local businesses thought that Llanwrtyd Wells was feasible as a centre for cycle tourism.

In early 1998, a public meeting was held in Llanwrtyd Wells to discuss progress on the study and invite views from the local community. Most people were very keen to encourage more tourism so long as the character of the town was retained. They particularly welcomed those tourists, such as cyclists, who came to enjoy the natural attractions of the area, stayed longer and spent more on local services.

The study also involved an assessment of the tourism infrastructure; looking at visitor attractions, accommodation provision, local services, transport networks and importantly, at existing and potential facilities for cyclists.

Demand for cycle tourism

In Britain, there is a continuing demand for short break holidays. Walking and cycling are very popular as leisure activities and mountain biking has a core following, including many young professional people. Cycle sales in Britain

remain at a high level with over 2 million bicycles sold every year. Cycle tourism is being actively promoted by a number of regional tourist boards and the development of Britain's 'National Cycle Network' is bringing interest in extending provision for cycle tourists.

In Llanwrtyd Wells, existing tourism demand is subject to weekly and seasonal variations. Particularly busy times are at weekends when events are taking place and during the summer months. The town is already popular with cyclists, particularly mountain bikers. Table 1 shows an estimate of the existing demand for day visits, short breaks and longer stays:

Table 1: Estimate of annual visitor numbers in Llanwrtyd Wells

LENGTH OF VISIT	TRIPS PER ANNUM (approximate)
Day visits	15,000
Short breaks	7,000
Longer stays	8,000

It is clear that there is

demand for cycle tourism in Britain, although Llanwrtyd Wells is disadvantaged by its geographical location. It is some distance away from major urban centres and this reduces its attractiveness to day visitors and for some short breaks. However, this may also be a positive attribute with visitors being attracted because of the remote location - where visitors can cycle in attractive countryside without encountering large numbers of other tourists.

Supply: the tourism resource base

Results from the local business survey showed that the biggest attraction for visitors to Llanwrtyd Wells is the outstanding scenery. It is therefore important that other tourism infrastructure does not have negative impacts on this natural resource.

Other visitor attractions include a Woollen Mill, tourist information and 'Red Kite' centre, the wells, local wildlife and of course, the footpaths, bridleways and tracks around the hills and forests.

Accommodation in and around the town ranges from hotels to hostels. There are approximately 360 bed spaces. Many of the buildings date from when the town was a thriving spa centre. There is no permanent campsite in the town but during events weekends, a local sports field becomes a temporary campsite. Local services include a number of public houses, a few shops, a bank, Post Office and café.

In terms of transport infrastructure, Llanwrtyd Wells is located on a major through road and public transport includes the 'Heart of Wales' railway, a daily Postbus and a Monday bus service to the nearby town of Builth Wells. However, there are a number of problems associated with the transport infrastructure including high speeds of vehicles passing through the town, poor signing to the town, limited train services at weekends, a limit of 2 bicycles carried on each train and a lack of bus services.

Cycling, and in particular mountain biking, was already popular in Llanwrtyd Wells but further development was limited because it was not being marketed effectively and there was a lack of facilities. A section of the National Cycle Network passes through the town centre and the town guide includes suggested cycle routes. However, none of these routes were signed. A mountain bike hire centre provided the only visible indication that Llanwrtyd Wells welcomed cyclists.

One of the most important resources to be identified in the study was the local community. Local people were full of innovative ideas to develop tourism in Llanwrtyd Wells and had a wealth of experience in organising events and getting involved in local projects.

PART 2: BIG IDEAS

Actions needed to develop cycle tourism

After considering the demand and supply, the consultants proposed a number of actions to develop Llanwrtyd Wells as a centre for cycling tourism. These were big ideas for a small town. However, a programme of implementation was outlined which would allow for incremental changes. Actions were set out in four phases, with implementation involving a wide

range of organisations. Each phase included a number of complementary actions. Proposed actions included:

Cycling infrastructure

- Develop a multi-purpose cycle centre
- Sign the National Cycle Network through Llanwrtyd
- Develop new cycle route guides for four on-road routes and
- Investigate off-road cycle routes
- Provide cycle parking

Accommodation and services

- Encourage farmers to provide small campsites
- Upgrade the quality of existing accommodation

Transport infrastructure

- Reduce speeds on main road by traffic calming and better signs
- Improve rail services, local bus services and timetable information
- Promote the railway and Postbus as visitor attractions

Marketing

- Develop quality publicity about the town, events and activities
- Market the town as a centre for cycling
- Review existing marketing
- Establish a visitor database
- Co-ordinate activity package holidays in and around Llanwrtyd

Community development

- Provide training in tourism services
- Sponsor local people to become qualified activity guides
- Appoint a part-time cycle ranger
- Encourage more participation by local people in environmental projects and provision of tourist information

It was therefore proposed to develop major new attractions such as a cycle centre and cycle routes whilst also developing 'après-bike' activities in Llanwrtyd Wells to encourage visitors to stay longer and explore further. The multi-purpose cycle centre was proposed as a medium-term development, requiring substantial investment.

The idea of a cycle centre is to combine cycle hire and repair facilities with a place for cyclists to shower and change, to wash cycles and to store cycles. Staff could also provide advice on cycle routes and guided rides. Ideally, a meeting room would be provided for groups of cyclists to congregate (and groups of walkers, birdwatchers etc.) as well as being available for community use.

The study concluded that it was feasible to develop cycling and green tourism in Llanwrtyd Wells and set out actions to achieve this. However, the success would be dependent on:

- Demonstrating local commitment
- Working in partnership
- Developing complementary actions
- Obtaining funding
- Making an early start (with low cost, easy to implement actions)

Progress during the first year of implementation

Having big ideas is one thing, putting them into practice is another. The study was completed in April 1998 and was welcomed by the local community and the local authority. Since then, they have been working together to make a start on developing Llanwrtyd Wells as a centre for cycle tourism.

There have been considerable improvements in cycling infrastructure. The National Cycle Network route between Llanwrtyd Wells and Builth Wells is now signed. Cycle parking is provided at three locations within the town. Leaflets have been produced for 3 on-road circular cycle routes. These routes include a short family route (13km), a longer, more challenging route (30km) and a challenging day ride around the hills and forests. A temporary 'trail' officer has been employed by Powys County Council to develop off-road cycle routes and commercial sponsors have been identified to provide funding for route signs. There is also interest in establishing a cycle shop in the town.

The local transport infrastructure has been improved with new signs on the main road on the approaches to Llanwrtyd Wells and reinstatement of the bus service to Builth Wells.

In terms of accommodation and training, Powys County Council has organised a 'cycle-host' course attended by 12 accommodation providers from Llanwrtyd Wells. The half-day course provided advice about 'cycle-friendly' accommodation. A student has been employed to review marketing and green tourism in the region and this should help to identify ways of promoting cycle tourism in Llanwrtyd Wells.

The developments described above indicate that good progress is being made in Llanwrtyd Wells and demonstrate the strong commitment to ensuring that the smallest town in Britain becomes a big name in cycle tourism.

THE FRENCH CONNECTION - PROMOTING CROSS-CHANNEL CYCLING

Les Robinson

27b Clifton Road Brighton BN1 3HN England

Town Planner with 30 years experience of planning matters in the UK, active cycle campaigner since 1973, working professionally on cycle route and network design.

THE FRENCH CONNECTION - PROMOTING CROSS-CHANNEL CYCLING

Southern England has busy towns and cycle-unfriendly roads. To cycle safely, we go to France. Since 1995, we have organised and led day-trips for up to 200 cyclists from Kent and Sussex to Normandy and the Pas de Calais. Many obstacles have been overcome, including:

- complying with French legislation
- obtaining suitable insurance
- persuading ferry operators to sponsor the events · designing cycle rides which fit ferry schedules
- transporting and paying for logistical support, ambulance, communications services · developing relationships with local communities
- convincing cyclists that they will have a great day out

We have now delivered a total of six events in three years. Our ambition to establish two-way cycle touring across our watery \$ontier is getting more realistic.

DIE FRENCH CONNECTION - FÖRDERUNG VON RADTOUREN JENSEITS DES ÄRMELKANALS

In Südengland finden wir geschäftige Städte und fahrradfeindliche Straßen. Um sicher radfahren zu können, weichen wir nach Frankreich aus. Wir organisieren und führen nunmehr seit 1995 Tagesfahrten für bis zu 200 Radfahrer aus Kent und Sussex in die Normandie und den Pas de Calais. Dabei haben wir viele Hindernisse überwunden, z.B.

- Einhaltung der französischen Gesetze
- Sicherstellung eines ausreichenden Versicherungsschutzes
- Gewinnung von Sponsoren unter den Fährenbetreibern

- Organisation von Radtouren in Übereinstimmung mit den Fahrplänen der Kanalfähren
- Transport und Bezahlung von logistischer Unterstützung, Ambulanz, Kommunikation
- Entwicklung von Beziehungen zu lokalen Gemeinschaften
- Überzeugung der Radfahrer, daß sie einen großartigen Tag genießen werden

Wir haben in drei Jahren insgesamt 6 Veranstaltungen organisiert. Unser ehrgeiziges Ziel, dafür zu sorgen, daß zwischen England und Frankreich über unsere Seegrenze hinweg bidirektional Radtouren im jeweiligen Nachbarland ermöglicht werden, rückt zunehmend in greifbare Nähe.

FRANCOSKA POVEZAVA – PROMOCIJA KOLESARJENJA PREKO KANALA

V mestih južne Anglije je gneča in ceste kolesarjenju niso prijazne. Za varno kolesarjenje hodimo v Francijo. Od leta 1995 smo organizirali in vodili enodnevne izlete za skoraj 200 kolesarjev iz Kenta in Sussexa v Normandijo in Pas de Calais. Premagati smo morali mnogo ovir, kot so:

- podreditev francoski zakonodaji
- pridobitev ustreznega zavarovanja
- dogovor z upravljalci trajekta, da so bili pokrovitelji dogodka
- načrtovanje kolesarske vožnje, ki se ujema z voznim redom trajekta
- plačilo za spremstvo, reševalce in komunikacijsko podporo
- razvijanje zvez z lokalnimi skupnostmi
- prepričati kolesarje, da bodo preživeli imeniten dan na prostem

V treh letih smo izpeljali šest izletov. Naša ambicija, da bi čez našo vodno mejo uvedli kolesarsko turo, ki bi vodila v obe smeri, postaja vedno bolj realistična.

THE FRENCH CONNECTION – PROMOTING CROSS-CHANNEL CYCLING

INTRODUCTION

A Frequently Asked Question for people involved with cycling in the UK is: "Where can we cycle for a day, without worrying about traffic?". The answer, for residents of coastal Southern England is - a couple of hours away, in Normandy. French side roads are quiet, the countryside is idyllic and when the occasional motorist sounds the horn, it is a friendly "toot".

This paper gives the facts of how nearly 1000 cyclists have been taken across the horizon for one-day rides in the French Connection series of charity events. It will focus most closely on the Normandy events, but will refer to those in the Pas de Calais as well.

The Poster and Discussion will include more illustrations and route maps, and look at possible implications.

HOW THE RIDES TAKE PLACE

The French Connection is a practical project. It is aimed at novice and less experienced riders, as well as fit "Club" men. This range of participants helps determine the approach.

It takes place within a strict framework of logistics. First of all it needs support from the host district, and from the carrier (obviously in this case, a ferry operator).

In France, large organised randonnées must obtain a Recépissé from the Préfet, authorising route and timetable. The Mayors of all the Communes you cross have to be advised. Public liability insurance of £5million is required. That achieved, co-operation is generous.

Examples of local support for the French Connection

- Ville de Dieppe and Ville de Calais: Police escorts, facilities for the Depart (Start) and Arrivee (Finish)
- Commune de Martin Eglise - welcome at Mairie, snacks and refreshments: use of sports hall
- Commune de Bouquehault - use of Mairie, indoor hall and facilities
- Commune de Bures en Bray - facilities at the Mairie and village school
- Commune de Guînes - use of Complexe de Sport, and facilities at Villlage St Joseph

These supporting communities vary from large cities to tiny villages: their interest and support has been consistently valuable to the events. There is a clear network operating so that from one year to another, we have gained by contacts being passed on.

The operators (Stena Line, then P&O/Stena Line) have been very supportive in sponsoring the events, but the ferry timetable is fixed for reasons which have little to do with the needs of a one-day cycle ride. This table shows how the services offered by the operator have been since 1995:

Newhaven-Dieppe "French Connection" Schedule

all times local

Year	Leave UK	Arr. France	Leave France	Arr UK	Hours in France
1995	815	1215	1715	2115	5.00
1996	845	1345	1700	2000	3.25
1997	845	1345	2300	0045	9.25
1998	645	1000	1545	1845	5.45

Allowing for the need to check-in at the Port, these schedules should have allowed between 2 " and 8 " hours cycling. The routes were designed to offer options which would be feasible in the time available, but depended on riders choosing a distance with which they can cope.

To assist riders and encourage people to venture across the border into unfamiliar territory, the following are supplied:

- information about the ride (map, instructions on what to bring, etc.)
- welcome at the Port, and at the finish
- signing of the route
- water/banana stops
- marshals
- first aid
- emergency radio communications
- mobile mechanics
- sweep van

The aim is to assure people that they will be looked after while abroad, will not get lost and will not be left behind. Our route signs are placed at all junctions, with repeaters to confirm that the correct turn has been made. There is a maximum gap of 1km between signs, because after 5 minutes without a sign, the inexperienced riders begin to get anxious (especially if climbing a long hill!)

Marshals re-inforce the message that "you are being cared for" and we allow up to 1 marshal per mile, focusing on difficult sections and junctions. All the marshals are themselves cyclists and trained to cope in emergencies. They handle the water/banana stops and log riders through check-points. With their bikes they can move around the route and "be in two places at once" first covering the outward route, then riding to the return route. They also put up the signs beforehand, and check they are still in place when the ride starts.

The role of the volunteer First Aid service is mainly to help people who are tired, sunburned etc. and does not replace emergency services. With it comes the amateur radio emergency network, RAYNET, working together with their French counterpart ADRASEC.

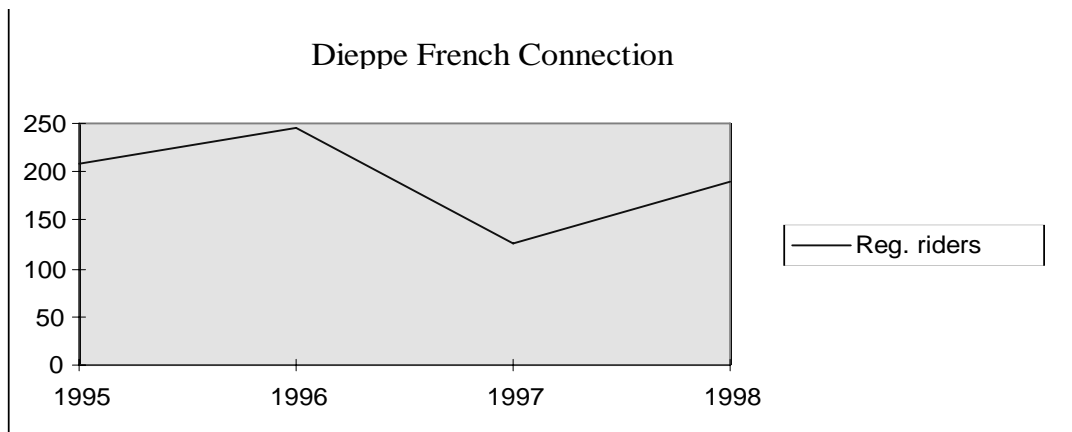
RAYNET provide fast information to the Ride Controller about problems and hold-ups. The Mechanic, Ambulance and Sweep Van all have on-board radio operators. They can be directed around the route so they are most useful. When necessary, riders can be encouraged to speed up so they do not miss the Ferry (and given lifts if they are exhausted or their bikes give up).

NUMBERS TAKING PART

The table shows data of registrations for the Dieppe ride, which has been going longest:

338 From a 1995

start point of just over 200, the registrations first rose in 1996, then fell significantly in 1997. Last year, there was a big recovery. This probably reflects the influence of "word-of-mouth" feedback between riders, as much as the quality of the "offer" each year. The 1996 ride gave the shortest time in France, under 3 hours, which was clearly insufficient. Since



then, the "offer" has improved each year and numbers have risen.

DISCUSSION ISSUES

The French Connection has shown that all kinds of cyclist can be attracted to "cycle across frontiers". In future we would like to see such cycle rides in France marketed in the normal way, so people will think no more of going to Normandy to cycle than they do of going to Dorset or Suffolk. Some questions arising are:

- is waymarking essential or would self-guided rides be acceptable?
- how long should the rides be?
- what level of back-up is needed - should an English "ride-guide" go with the cyclists, or would a local dial-up rescue service be enough?
- similarly, is a support vehicle essential
- should refreshments be organised, or should riders find their own?

We hope that the Ferry Operator will begin to facilitate the development of the market by offering cycling packages and timetables which suit this growing form of "green tourism". A new operator, Hoverspeed (the fourth in under 10 years) is taking over the Newhaven-Dieppe route. Discussions are under way with them, and a progress report will be given in the Poster Session.

MORAVIAN - SILESIAN LONG-DISTANCE CYCLE ROUTES**Jaroslav Martinek**

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- co-ordinator of national cycling routes
- works for the Transport Research Center in establishing and equipping of cycling routes
- promotion of all types of cycle routes (long-distance, regional and local)
- participation at travel trade fairs (presentation of cycle tourism)
- presentation of cycling in the Czech Republic (workshops) at the Velo City Conference in Barcelona (Spain, Autumn 1997)

MORAVIAN - SILESIAN LONG-DISTANCE CYCLE ROUTES

- 1) introduction of Transport Research Center (hereinafter : TRC)
 - TRC's field of activities
- 2) development of cycling transport in Czech Republic
 - 80th - new boost of cycling transport
 - 90th - transport politics
- 3) long-distance cycling in Czech Republic
 - national system of cycle routes
 - international connections (in accord with the Euro-Velo project)
 - position of Moravian cycle routes
- 4) Moravian Path - 330 km long national cycle route
 - a) marking of the route
 - b) promotion activities, public relation
 - c) glance at cycle tourism since the route has been promoted
- 5) Conclusion - first concrete project results

ENGLISH

MÄHRISCH-SCHLESISCHE RADWANDERSTRECKEN

- 1) Vorstellung des Verkehrsforschungszentrums
 - Der Tätigkeitsbereich des Verkehrsforschungszentrums
- 2) Entwicklung des Fahrradverkehrs in der Tschechischen Republik
 - 80er: Neuer Aufschwung des Fahrradverkehrs
 - 90er: Verkehrsstrategien
- 3) Radwandern in der Tschechischen Republik
 - Nationales Radwegenetz
 - Internationale Verbindungen (in Übereinstimmung mit dem EuroVelo-Projekt)
 - Stand der mährischen Radstrecken
- 4) Mährischer Weg - 330 km lange nationale Radstrecke
 - a) Markierung der Route
 - b) Werbeaktivitäten, PR
 - c) Ein Blick auf den Fahrradtourismus seit Werbung für diese Route gemacht wird.
- 5) Schlußfolgerungen - erste konkrete Projektergebnisse

Anmerkung: Im Rahmen der VeloCity 99 wird auch über den Fahrradverkehr in Olmütz (städtischer Abschnitt des Mährischen Wegs) berichtet.

DEUTSCH

MORAVSKO - ŠLEZIJSKE DOLGODISTANČNE KOLESARSKE POTI

Predstavljene bodo naslednje točke :

- 1) Uvod Centra za raziskovanje prometa (TCR)
 - aktivnosti le-tega centra
- 2) Razvoj kolesarskega prometa v Češki republiki
 - 80-deseta: ponoven dvig kolesarskega prometa
 - 90-deseta: transportna politika
- 3) Dolgodistančno kolesarjenje v Češki republiki
 - nacionalni sistem kolesarskih poti
 - mednarodne povezave (v povezavi s projektom EuroVelo)
 - položaj moravskih kolesarskih poti
- 4) Moravska pot - 330 km dolga nacionalna kolesarska pot
 - a) označitev poti
 - b) pospeševalne aktivnosti, stiki z javnostjo
 - c) bežen pogled kolesarskega turizma , od pospeševanja poti naprej
- 5) Zaključek : prvi konkretni rezultati

STRATEGY OF FURTHER DEVELOPMENT OF CYCLING TRANSPORT**1.1. GENERALLY**

After the long period of stagnancy, the nineties brought a new boost of cycling transport in the Czech Republic. Cycling transport is taken for the equivalent means of transport and bicycle is becoming step by step a symbol of modern life style. The significance of non-motorized transport is emphasized, it is considered a means for removing of useless or environment non-friendly transport. This new trend appeared also in the New Transport Policy in CR which partially solves the problematic of cycling transport.

Therefore the Transport Research Center (hereinafter TRC) supported by the Czech Ministry of Transport and Communications has successively created the development strategy of cycling transport, which is divided into three blocks mutually connected. The origin of the strategy comes back to 1993 and is joined with the new transport policy of the state :

- a. Elaboration of the professional publication - Development of cycling transport in CR - I. - II. volume (1993 - 1999).
- b. Support of cycling transport through cycle tourism (1996 - 2006).
- c. Investigation of conditions for application of cycling transport as an integral and equivalent part of the transport system (2000 - 2003)

Part „a.“ and „c.“ has rather the technical and investigative character.

The strategy is based on addressing to the large public with two prime objectives :

- motivate and encourage to use the bicycle as an alternative environment-friendly means of transport (saving of time - speed, promptness; low costs; positive influence on health; cheerful fitness...)
- create good conditions for building cycle paths in towns

1.2. SUPPORT OF CYCLING TRANSPORT THROUGH CYCLE TOURISM

One of the programs which can fulfill the objectives mentioned above, is the development of cycle tourism in CR. It is supposed that if the goal-directed support and promotion of cycle tourism starts, the impact will automatically appear also in increasing of general interest in cycling transport. Considering experiences from western countries, we can say that there are still great backlogs in this field. Otherwise at our market it is possible to get many cycle tourist maps or cycling guides, there are also a lot of tips for cycle trips in promotional materials for particular regions, but it presents just a fragment of cycle tourists' needs and requirements.

Therefore the Czech Ministry of Transport and Communications ordered elaboration of the study „Basic system of cycle routes in Czech Republic” and simultaneously entrusted TRC to create groundwork for its implementation. For the first stage there were chosen cycle routes of international meaning - the EuroVelo project and borderland routes. There was elaborated also the exemplary pilot project Moravian - Silesian Long-distance Cycle Routes, its objective is to signpost and promote the network of long-distance, regional and local cycle routes enabling access for cyclists to all the attractive localities of Moravia and Silesia. The project will be spread successively to the whole country in the future. The project counts on building cycle paths, especially in towns. Pioneer works were launched already in 1995, thanks to these activities a high level of coordination and cooperation of Moravian and Silesian districts was established.

2. PROJECT MORAVIAN - SILESIA LONG-DISTANCE CYCLE ROUTES

The project „Moravian - Silesian Long-distance Cycle Routes is considered the next occasion for all the citizens to create the active and healthy life style, as a contribution to the harmonious development of rural area, the way how to increase influx of tourists into our residencies, as well as a possibility of further development of cycling transport.

The frame of the project is formed by 8 main long-distance cycle routes, it is linked with the system of regional and local cycle routes. It deals with the following cycle routes:

1. Moravian path (Jeseník - Olomouc - Breclav - Bratislava) = EuroVelo Amber Route
2. Amber path - the local cycle route with the same title like EuroVelo route n. 9 (Ostrava - Prostějov - Brno - Hevlín - Wien)
3. Northern border-side cycle route (1st stage Ostrava - Jeseník, 2nd stage Jeseník - Decín)
4. South-eastern border-side cycle route (Ostrava - Vsetín - Hodonín - Breclav)
5. Southern border-side cycle route (1st stage Breclav - Vranov - Slavonice, a part of Greenways cycle route Wien - Praha, 2nd stage Breclav - Lipno)
6. Czech-Moravian cycle route (Jeseník - Jihlava - Slavonice)
7. Prague path (1st stage: Brno - Hlinsko, 2nd stage: Brno - Praha)
8. Greenways cycle route Prague - Vienna

The project includes these four parts:

- signposting of cycle routes
- construction of problematic sections
- promotion of cycle routes including linkages to the EuroVelo project
- active cooperation with involved subjects and fundraising

2.1. SIGNPOSTING OF CYCLE ROUTES

While devising cycle routes the maximum security is taken into consideration, it is executed by separating from heavy car traffic. Various solutions for cycle routes are applied, they differ one from another by their levels of segregation of cycling transport from other kinds of transport. The following possibilities are applicable:

- current local and purport ways including field and forest ones
- current 3rd class roads (with very low intensity of car traffic)
- current 2nd class road (with low intensity of car traffic)
- cycle ways

The data for signposting of cycle routes are the „Guidelines for orientation signposting of cycle routes”. The signs have a yellow background and they differ according to types of ways where they are situated. Road cycle signs keep the form of car transport signs, forest and field cycle signs are in harmony with the system of hiking signs - sheet metal tablets or the signs painted on tree trunks. Each signposted cycle route has its own number. Each sign shows the cycle route number which will be the main guideline for your trip. However it is needed to call attention to the fact that the long-distance cycle routes, such as for example the Moravian Path or Amber Path (local long-distance cycle route, not the EuroVelo Amber Route) will not be indicated by the only number, but each section of a long-distance cycle route will have its own number, then the total number of the whole route will be combined. This kind of numbering is analogical to road numbering system and for the future, as soon as the network of long-distance, regional and local cycle routes will be achieved, it will facilitate orientation of cyclists.

Administrator of signposting will be the Czech Tourist Club (KČT).

2.2. CONSTRUCTION OF PROBLEMATIC SECTIONS

Unfortunately, cycle routes go in several cases by sections with natural surface or with high traffic. This situation occurs mainly in towns and near surroundings. These unregulated sections make about 10% from the total length of each cycle route. Therefore it is needed to repair these sections or even build new ways. Beyond some exceptions it deals as well with sections which are important for regular daily commuting journeys. Here we are approaching to the base of the program (seeing the aspect of development of cycling transport).

The main problem is not a lack of theoretic knowledge, but the lack of implementation. It is not caused by unwillingness of city councils to support cycling transport, but in brief - there are more important tasks to be solved and paid. So cycling transport takes just a symbolic position while approving budgets and allocating amounts. Right these long-distance cycle routes with their significance can convince decision makers from local governments to construct problematic sections.

The impulsion for construction could be the long-distance cycle routes, but especially local cyclists could have the primary benefit from these cycle routes - both of them : while commuting to work and going to near surroundings to enjoy recreation.

2.3. PROMOTION OF CYCLE ROUTES INCLUDING LINKAGE WITH THE EUROVELO PROJECT

The separate part is promotion and marketing. It is generally valid that more efficient it will be, the probability rate of construction of cycle ways will be higher.

In the field of promotion TRC cooperates with the Regional Development Agency for Central Moravia which has the marketing department and represents villages, towns and whole districts of this region. First results already appeared - there were published : the first leaflet showing information on cycle routes, several posters and on the top the map cycling guide of Moravian Path, including lengths and difficulty levels, indicating also gradients etc. The map guide is moreover the first material of its kind at the Czech market at all.

Promotion is divided into three levels:

- in the frame of EuroVelo project
- in the frame of Moravian and Silesian area
- in the frame of particular long-distance cycle routes

Regarding the lack of financial sources, implementation of particular areas will depend on the interest of involved bodies.

2.3.1. Promotion in the frame of the EuroVelo project

The EuroVelo project presents the network of 12 pan-European cycle routes linking all European countries. It is based mainly on current and planned cycle routes on nationwide, regional and local levels. Through Moravia and Silesia go the EuroVelo cycle routes n.6 (from Normandy to Black Sea) and the EuroVelo route n. 9 (from Baltic Sea to Adriatic Sea). In the frame of consortium of these routes, the coordinators Moravian - Silesian long-distance cycle routes are ready to share in promotion of the cycle routes. You can get more details about this project from one of presentations at this conference.

2.3.2. Promotion in the frame of Moravia and Silesia

This level of promotion will present in particular the area of Moravia and Silesia as the whole - it is a complex offering 8 long-distance and several other significant regional cycle routes. The cyclists will have the possibility to choose their cycle route. Therefore several materials will be published :

- promotional material - image leaflet, survey of cycle routes in Moravia and Silesia
- panoramic map - image map, survey of cycle routes in Moravia and Silesia
- catalogue for particular cycle routes
- poster, survey of cycle routes in Moravia and Silesia
- creation of presentation WWW pages on Internet

The intention is envisaged to be put into practice in 2000, when signposting of many cycle routes should be accomplished.

2.3.3. Promotion in the frame of particular long-distance cycle routes

When a cyclist chooses the given cycle route, he will have more promotional materials at his disposal:

- promotional materials of the cycle route
- panoramic map in the form of leaflet (folder)
- guide of long-distance cycle route
- catalogue of services - accommodation, services, places of interest...
- creation of presentation WWW pages on Internet

You can get the detailed information at tourist offices, qualified consultants can help you to make a trip program. There is counted also with a special reservation system.

The long-distance cycle route is not meant to be just the backbone cycle way, but it includes also a 30 km corridor surrounding the regional and local routes which are linked with the long-distance cycle route. These local routes make accessible all the important places of the region.

2.4. Active cooperation with involved bodies and fundraising

Although the project is coordinated from above, there still are not financial means for implementation. Therefore cooperation with representatives of city and district councils is very important. Without their help the project would not be feasible. The cooperation does not consist only in coordination and consulting the route itinerary, negotiating a proposal of signposting with the police or in information retrieval, but especially in fundraising. Meanwhile the project was awarded by a grant from the Partnership Foundation (Partnerství) - the amount of 12150 ECU. Also because of this reason, there has always been put out the pressure onto towns and villages to lead them to appropriate this project. It is emphasized that the implemented project naturally brings also the development of travel tourism and thereby the influx of potential tourists. This method can make the project economically attractive for many regions, towns and villages. This way enables increasing of interest in this topic and initiates construction of cycle paths.

3. PRESENT STATE OF THE PROJECT (29.1.1999)

3.1. MORAVIAN PATH

- signposting of Moravian Path: Jeseník - Hanušovice - Olomouc - Tovačov - Uherské Hradiště - Hodonín - Břeclav, length: 330 km (festive opening 9.6.1998)
- signposting of other regional and local cycle routes in the districts of Jeseník, Olomouc and Břeclav
- publication of the advertising leaflet for Moravian-Silesian long-distance cycle routes
- publication of the guide of the signposted Moravian Path
- publication of cycle tourist maps - Jeseník area, Olomouc area, Uherské- Hradiště area, Pálava area
- several towns along the Moravian Path declared the good will to support the project in construction of cycle routes around Olomouc, Litovel, Kroměříž, Uherské Hradiště, Břeclav). The most initiative area is Olomouc region where villages altogether created their own large project of cycle ways and apply for some support from EU. Construction of the following sections are in priority : ways significant for both of purposes : regular journeys (employee commuters), also for occasional trips (recreation). More information on this topic will be given in one of presentations at this conference (Cycling transport in Olomouc), if you are interested.

3.2. AMBER PATH

- signposting of the part of Amber Path: Prostějov - Olomouc - Studénka délka: 100 km
- the path will be signed in total length, which is 300 km, till 2000
- in the Nový Jičín district, there were signed also the linking cycle routes
- publication of a guide of the Amber Path (May 1999)

3.3. SOUTHERN BORDER-SIDE CYCLE ROUTE (BŘECLAV - SLAVONICE - LIPNO)

- The Civic Association of Greenways signed the route from Praha - Jindřichův Hradec - Valtice - Wien: 450 km
- in the districts of Znojmo and Jindřichův Hradec the route comes in the local cycle network (signposting implemented by the PHARE program - small projects)

- in the district of Břeclav the route uses the local cycle network
- publication of the guide of the signed route : Greenways / Praha - Wien

3.4. OTHER CYCLE ROUTES

- signposting of a part of Prague cycle path: Brno - Hlinsko length: 100 km (June 1999)
- signposting of a part of Czech -Moravian path: Slavonice - Jihlava - Hlinsko délka: 100 km (August 1999)

4. FURTHER INITIATIVES IN CYCLE TOURISM

Besides the project mentioned above : Moravian - Silesian Long-distance Cycle Routes, more cycle routes are implemented. They are worked out in the frame of the study „Basic System of Cycle Routes in CR” and thanks to their character they will be used especially in aspect of cycle tourism. The routes go through localities attractive for tourists and they will ensure interconnection with international cycle routes, eventually with EuroVelo cycle routes. It deals with these cycle routes : the cycle route Děčín - Praha - České Budějovice (EuroVelo n.7), the Elbe Path (Labská stezka) and cycle routes in borderland - Šumava Mountains, Krušné Mountains a Liberec region.

There is intention for the future to connect all these plans and create the unified project - Cycle Routes in Czech Republic.

5. CONCLUSION

On the basis of actual experiences from implementation of the Moravian Path it is probable that the project will run the process of building of cycle infrastructure in towns which is decisive for taking advantage of potential of cycling transport within transportation on short distances, as it is obvious in European countries with high-developed cycling transport. We are convinced that the project is able to induce improving of quality of cycling transport and to put cycling transport into the position of an equivalent partner which is able to transfer the important part of modal split. It will enable also better motivation and encouraging of cyclists which will see the benefits of bicycles as a means of transport to work, including saving time, money and helping to keep clear air.

We would like to draw your attention to other results of the project, you can participate at the Conference of Velo-City 2000 in Amsterdam where this topic will be continued.

MARIBOR MODEL IN SIGNING RECREATION CYCLING PATHS PROBLEMS IN THE CYCLING PATHS SIGNING

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PROBLEMS IN THE CYCLING PATHS SIGNING

The paper deals with the experiences of the graphic designer who has been active in the field of cycling for years. It presents a project of marking recreation cycling paths. The first part consists of major functional and designing problems, the second one presents an entire solution in managing recreation cycling traffic in the area of eastern Pohorje. The described solution offers the possibility of unifying and restoring a common system of managing recreation cycling traffic.

PROBLEME BEI DER BESCHILDERUNG VON RADWEGEN

Das Referat beschreibt die Erfahrungen eines Graphikdesigners, der viele Jahre im Bereich des Fahrradverkehrs tätig war. Es konzentriert sich auf ein Projekt der jüngsten Zeit, das sich mit der Beschilderung von Freizeitradwegen befaßt, die mit vielen anderen Arten von Verkehrswegen interagieren. Im ersten Teil werden die wichtigsten funktionellen und gestalterischen Probleme dargestellt. Im zweiten Teil wird eine ganzheitliche Lösung vorgestellt, und der dritte Teil beschäftigt sich mit Erfahrungen und Beispielen. Die Lösung beschränkt sich nicht auf den lokalen Bereich (Zeit und Ort) sondern ist für eine breitere Anwendung gedacht.

PROBLEMI PRI OZNACEVANJU KOLESARSKIH POTI

Članek opisuje izkušnje grafičnega oblikovalca, ki deluje na področju kolesarjenja že vrsto let. Predmet predstavitve je projekt oznacevanja rekreacijskih kolesarskih poti. V prvem delu so prikazani glavni funkcionalni in oblikovalski problemi, drugi del pa prikazuje celovito rešitev vodenja rekreacijskega kolesarskega prometa na področju vzhodnega Pohorja. Prikazana rešitev ponuja možnost poenotenja in vzpostavitve splošnega sistema vodenja rekreacijskega kolesarskega prometa.

MARIBOR MODEL IN SIGNING RECREATION CYCLING PATHS PROBLEMS IN THE CYCLING PATHS SIGNING

INTRODUCTION

The revival use of bicycles in the last ten years, even for recreation purposes, has revealed the necessity and needs for specific approaches in different processes of designing traffic roads. The characteristic understanding of recreation cycling traffic is reflected mainly in the process of signing the recreation cycling paths. The question is what, where, how and to which extend information should be transferred to cyclists and other visitors of tourist and recreation objects/areas.

These problems are mainly faced by local communities as they try to pass information on recreation cycling within the entire tourist offer. They want to mark the recreation cycling paths in understandable and clear way. Every local community tries to solve the problem in another way, the best they can and the most inventive as possible. Unfortunately, that presents a disadvantage in restoring an entire tourist and recreation cycling offer in a wider region or area. There is a specific problem in organizing recreation cycling paths in public road system as the signalization should be adjusted to the demands of a uniform traffic management.

Let us show the results of the project work "Signing of the recreation cycling paths" carried out by the Maribor

Development Agency within the Phare programme.

The need for an organized approach in signing recreation cycling paths derives from the Sports Centre Pohorje which carries out almost all tourist recreation activities in the area of eastern Pohorje. Its work has been approved by administrative bodies of the Maribor municipality, tourist and sports associations, Maribor cycling organization and other influential organizations. They published a booklet Pohorje - Outdoor in March 1998. The making and positioning of signs and information boards exceeded the working field of the centre due to the Phare programme funds. With the help of the Maribor Development Agency the project field has been spread from eastern Pohorje to the hills north-east from Maribor although this region does not belong to the working field of Sports centre Pohorje. My authentic work is presented in restoring the signing system and in designing the information system where I was supported by Mr. Marjan Benko from Sports centre Pohorje, who devoted his professional work to the problem of serviceability, maintenance and organization of recreation cycling activities.

1. MAJOR FUNCTIONAL AND DESIGNING PROBLEMS

I started to deal with concrete problems in graphic designing and equipping cycling paths in 1997, when I was challenged by the Sports Centre Pohorje to design graphic signing system of the recreation cycling paths on Pohorje. Pohorje is the mountain chain south-east from Maribor, regional centre with 150.000 inhabitants and is the second biggest town in the Republic of Slovenia. Winter and summer sports, tourist and recreation activities in this part of Pohorje is carried out by the Sports Centre Pohorje. It includes the entire eastern part of Pohorje (Maribor, Ruše, Hoče, Bistrica and Ribnica) what represents, regarding the sport and recreation surfaces (220 ha), the biggest Slovenian tourist centre. It extends to the neighbouring, nationally important tourist and recreation centre on Rogla.

The first actual problem I faced was to find information and demands in Slovenian regulations for setting information boards. As there is no regulation in this field in Slovenia I was studying the regulations in other countries to find out basic starting-points. A great number of various as well as unique approaches to its solution, inconsequent regulation and the understanding of contractors enabled me to execute the described system.

Basically, I tried to solve the following dilemma: whether to inform a recreation cyclist by means of written matters and directing objects in the field or to offer him some written information and at the same time to lead organized groups or individuals as it was carried out in some centres. We decided to introduce an open system (first variant) to enable a free choice in recreation activities.

2. SUGGESTED AND EXECUTED SOLUTION

We had to make out a minimum but sufficient list of information a recreative cyclist needs as well as the basic elements of the information system as:

- symbols (signs),
- a clear map of the region,
- printed matter,
- information and direction boards in the field.

Having these elements of the information system at disposal a recreative cyclist can be moving around independently. Criteria for choosing basic symbols are simplicity, an easy use, variety of setting into the environment (board print, tree print) and the ability of being applied for various purposes and activities (maintenance, help and service by mountain cyclists, etc.). I avoided using detailed technical elements of a bike as they do not fit into the nature.

Direction boards contain a decreased variety of information (sign, route number is being integrated into it, direction) as cyclists find hard to notice a bigger amount of information in a short period of time. The colour was defined: red on grey ground, while its shape is comparable to common tourist traffic signalization to be easily applied in public road system further on..

To work out clear, easily scanned maps special attention was paid to the density and the number of information, therefore we chose a mountain map with 200 m of equidistance. The size, materials and the way of setting the information and direction boards help to save the signing unity of Slovenian national parks. The choice may be justified by the fact that recreation cycling is not the only activity that needs information and that they are often found next to other signs.

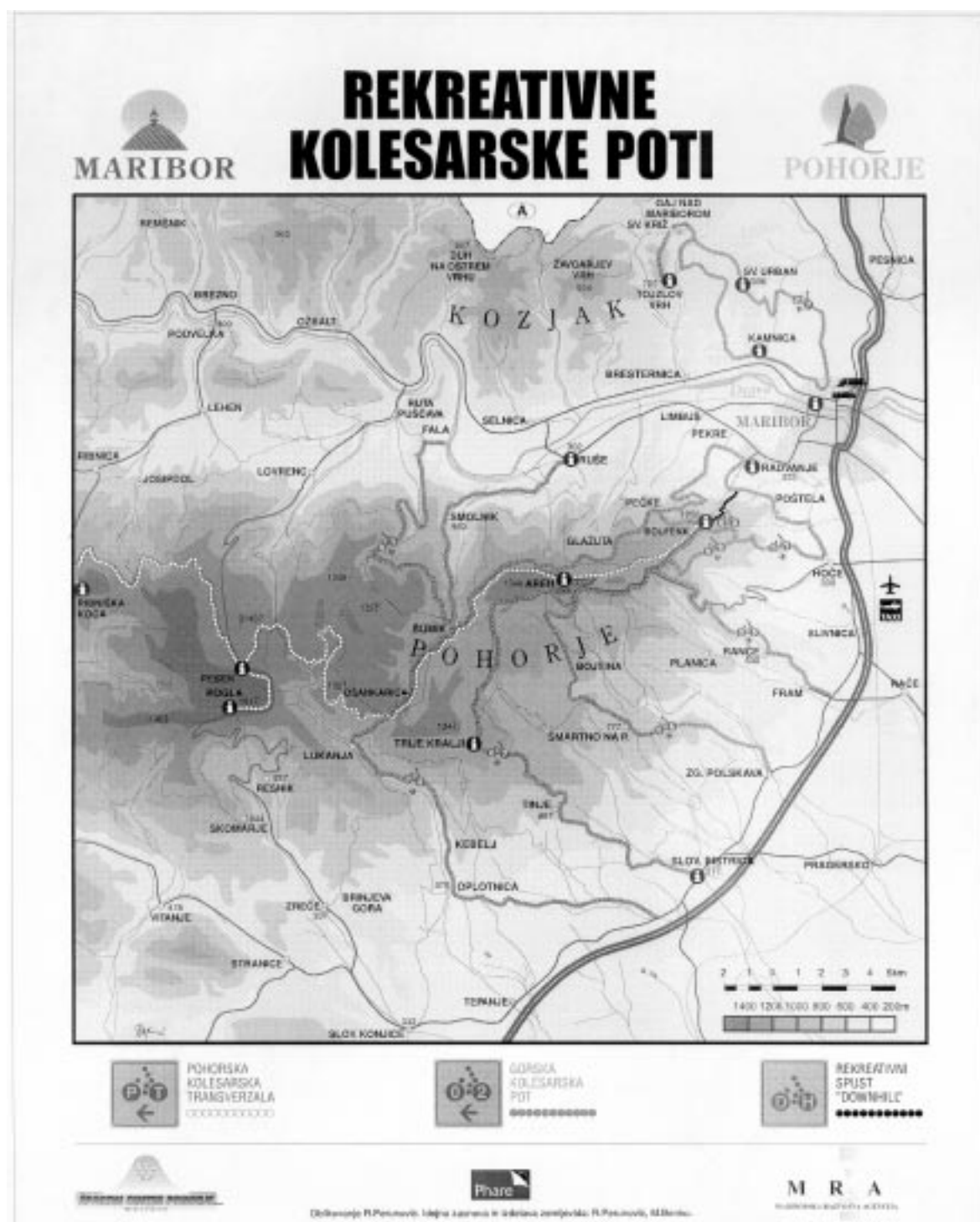
Columns are made of wood, direction boards of aluminium, while information boards are made of Promele board.

composed of special paper and resin, on their front side there is a map with basic information.

CONCLUSION

The presented system of signing recreation cycling paths presents the first step towards a uniform signing in two separated areas that are placed at different ends of a bigger town. There is also effort to sign the Pohorje cycling transversal uniformly from Maribor Pohorje to Rogla and Slovenj Gradec. The transversal will be incorporated into the long-distance cycling paths in the Republic of Slovenia, and at the same time it will be attached to the European cycling path system.

The execution of the described project pointed at certain problems that are not solved in Slovenia yet. We should point out the need for restoring technical specifications for signing recreation cycling paths that will be comparable to European ones as well as the need for a uniform appearance at the European market of tourist and recreation offers. This is the only way for Slovenia to join the European integration system fearlessly.



THE RAVEL IN WALLONIA - BELGIUM

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ENGLISH

THE RAVEL IN WALLONIA - BELGIUM

RAVeL started in 1995 with the avowed aim of developing a network of paths along abandoned railway lines and canal tow paths to provide a safer transport network for the more vulnerable road users such as cyclists and pedestrians and in certain cases horse riders. It is important to note that the RAVeL is a regional network (2000km) which has a similar status to two other regional networks which deal with motorised traffic.

More recent objectives of RAVeL include an improvement in the quality of life and an opportunity for gaining exercise and thereby improving health in the region. Also a socio-economic aspect has been added because the network is seen as a way of developing local tourism and helping rural economies.

DEUTSCH

RAVEL IN WALLONIEN, BELGIEN

RAVeL wurde 1995 mit der Zielsetzung ins Leben gerufen, ein Wegenetz entlang aufgelassener Eisenbahnlinien und Leinpfade von Kanälen zu schaffen, um schwachen Straßenbenutzern wie Radfahrern und Fußgängern und - in bestimmten Fällen - auch Reitern ein sichereres Verkehrsnetz zur Verfügung zu stellen. Wichtig ist, daß RAVeL ein regionales Netz (2000 km) ist, das den gleichen Status wie zwei andere regionale Netze genießt, die dem motorisierten Verkehr zur Verfügung stehen.

Erst unlängst ins Auge gefaßte Zielsetzungen von RAVeL umfassen unter anderem eine Verbesserung der Lebensqualität und die Schaffung von Möglichkeiten zur sportlichen Betätigung und damit zur Förderung der Gesundheit in der Region. Auch ein sozioökonomischer Aspekt wurde mit aufgenommen, da das Netz als Möglichkeit zur Entwicklung eines lokalen Fremdenverkehrs und als Unterstützung für die ländliche Wirtschaft betrachtet wird.

SLOVENSKO

VOZEL V VALONIJI - BELGIJA

RAVeL je prišel leta 1995 s priznanim ciljem razvijanja omrežja poti, ki vodijo vzporedno z opuščenimi železniškimi progami ali kanalnimi vlečnimi potmi, da bi omogočili varnejše prometno omrežje bolj ranljivim uporabnikom cest, kot so to kolesarji, pešci ter v nekaterih primerih tudi jahalci konjev. Pomembno je poudariti, da je RAVeL regionalno omrežje (2000 km), ki ima podobni status kot drugi dve regionalni omrežji z motoriziranim prometom.

Novejši cilji RAVeL-a vključujejo izboljšavo kvalitete življenja, kot tudi priložnost izboljšane vadbe in s tem izboljšavo zdravja v regiji. Dodan je bil tudi socio-ekonomski aspekt, saj je omrežje videno kot pot razvijajočega se lokalnega turizma in kot pomoč podeželskemu gospodarstvu.

WEDNESDAY

THE RAVEL IN WALLONIA - BELGIUM

INTRODUCTION

Belgium is a small country at the heart of Europe, its capital Brussels is well known for its European institutions such as the European Union and it also the headquarters of NATO. Belgium has an area of around 30,000 square kilometres and has 10 million inhabitants which makes it one of the most densely populated countries in Europe.

Belgium is a federal state and is divided into three regions each with its own parliament and elected representatives: Flanders in the north, Brussels Capital in the centre, and Wallonia in the south and three communities: Flemish in the north, French-speaking community in Wallonia and a small German speaking community on the German border. Most aspects of government in Belgium have been devolved to the regions and thus there is a clear difference between some policies implemented in Wallonia compared to those implemented in other regions.

This paper will therefore outline the development of the RAVeL network in Wallonia the French-speaking part of Belgium.

HISTORICAL OVERVIEW

Before the second World War, Belgium was the country with the densest network of railways in the world (more than 300 metres per square kilometre and with a total length of 10,000 kilometres). Incredibly, before the second World War, no point in Belgium was further than 3 kilometres from either a tram or a train stop. However, this was the heyday of rail in Belgium and by 1997, the rail network had been reduced by two-thirds leaving over 6,500 kilometres of abandoned tracks. Rail was not the only transport to be widely spread in Belgium. There are also 2,000 kilometres of navigable waterways both rivers and canals existing in Belgium.

More than half the abandoned rail lines were in Wallonia and gradually these abandoned lines began to be seen as less of a problem and more as a potential resource. After the oil crisis in the seventies, more attention was paid to what was seen as a dormant resource and two abandoned lines were acquired by the Belgian government at that time and developed for tourism purposes. This point can be seen as the beginning of the RAVeL idea.

RAVeL : DESCRIPTION AND OBJECTIVES

We are not sure whether Ravel actually enjoyed wandering along abandoned railway tracks but his name does give us a useful acronym which stands for Réseau Autonome de Voies Lentes, which roughly translated means an autonomous network of slow paths. We could also describe this network as an 'alternative network of paths' destined for cyclists and pedestrians. RAVeL started in 1995 with the avowed aim of developing a network of paths along abandoned railway lines and canal tow paths to provide a safer transport network for the more vulnerable road users such as cyclists and pedestrians and in certain cases horse riders. To these main users, we should add roller skaters and other vaded means of transport such as pedal-driven carts and horse drawn buggies. It is important to note that the RAVeL is a regional network which has a similar status to two other regional networks which deal with motorised traffic, RGG (Réseau à Grand Gabarit - freeways and major roads with maximum speeds of 120 kilometres per hour) and RESI (Réseau Interurbain - roads in and between towns which have a maximum speed of 90 kilometres per hour). These three networks are managed by the Walloon Ministry of Roads and Transport.

The RAVeL network is mainly based on towpaths and disused rail tracks both standard and narrow gauge and also involves the development of smaller paths giving access to the network. All these paths are physically separated from motorised networks except at access and crossing points which have to be carefully designed. The project will involve more than 2000 kilometres of paths, of which more than one third, mainly towpaths, is already in use. Although RAVeL is limited to Wallonia, similar schemes have been started in neighbouring regions and countries. One of the challenges that faces RAVeL is the linking with other networks to provide a future European network. One example of this European dimension is the EUROVELO project (cycle way network).

From the early definition of an alternative transport network with its emphasis on security for non-motorised traffic, more recent objectives of RAVeL include an improvement in the quality of life and an opportunity for gaining exercise and thereby improving health in the region. Also a socio-economic aspect has been added because the network is seen as a way of developing local tourism and helping rural economies.

FEATURES AND COSTS

Disused railways and towpaths have several advantages for the cyclist and the pedestrian. For example, the paths are usually flat, most having maximum gradients of 3%. There are few places where the paths intersect with motorised traffic and the paths usually connect rural or urban centres where services such as public transport, schools and shops are available. RAVeL has at present an annual budget of 200 million Belgian francs which is equivalent to around \$6 million. The cost of converting a kilometer of disused railway into the RAVeL is between \$30,000 and \$90,000. The project should run until 2005 by which time it is hoped that 2000 kilometres of pathway will be accessible.

ADDED BENEFITS

The RAVeL does not only develop safe and alternative transport networks, it also contributes to an enhancement of the countryside and nature and the cultural heritage. Conservation of the natural environment is one of the objectives of RAVeL. Disused railways because of their 'neglected' state often constitute interesting sites with lots of bio-diversity and geological interest. This means that it is necessary to respect the natural aspect of the paths and a careful balance must be struck between the users and their demands and the site itself. Railway lines and canals are often bordered by hedges and trees which give an interest to the landscape. However, the landscape has also been improved by the built heritage linked to the exploitation of railways and canals. A very good example of this is the series of hydraulic lifts on the Canal du Centre in Wallonia which have been proposed as a UNESCO World Heritage site. On a less grand scale many stations, bridges, locks, and other features of previous use contribute both visually and educationally to the environment. Moreover, many buildings are able to be transformed and saved by new uses such as restaurants and cafes, bike shops etc.

CONCLUSION

In conclusion, two ideas are worth mentioning. Firstly, we can see that the development of the RAVeL is a clear example of a changing philosophy regarding land use in Wallonia. Initially seen as a safe and alternative network of travel, the RAVeL now plays a wider role in the development of a new philosophy of public space. This new philosophy is based on four key points. Firstly, the need for courtesy and respect for other users sharing the same public space. Secondly, making people more responsible for the environment and in this case the upkeep of the network itself. Thirdly, the ability for local groups to participate in decision making and the implementation of policy and finally, the promotion of a new kind of tourism respecting both the natural and cultural aspects of the site and other users. Secondly, RAVeL involves 2000 kilometers in Wallonia but it is hoped to build on this network to achieve a pan-European network linking countries and regions together. This paper started with a description of Belgium as the cross-roads of Europe, we look forward to cyclists crossing Belgium on their way across Europe with just one currency in their pocket!

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BICYCLE FACILITIES DEVELOPMENT/PROMOTION IN DUBLIN**Robert Kelly**

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BICYCLE FACILITIES DEVELOPMENT/PROMOTION IN DUBLIN

In Dublin prior to 1995 there were no significant cycle facilities in Dublin, no Government Policy on cycling, no cycle network proposal for the city and its environs, no guidelines for the design of cycle facilities, no expertise in the country in the design of cycle facilities, no legislation / regulations covering cycling, no Government agency actively promoting the development of cycling facilities.

At the same time there was a rapid decline in the numbers of cyclists commuting by bicycle to work during the morning peak hour - from 8,000 in 1988 to 6,000 in 1994. Also the numbers cycling to work in Dublin changed from 100,000 per day in 1961 to 22,000 per day in 1994 (accounts for 5% approximately to day).

The challenge facing the Dublin Transportation Office (DTO) was to:

- bring the bicycle back as a mode of transport,
- put cycling on the public agenda and,
- develop strong cycling philosophies within the agencies.

A number of mechanisms have been put in place by the DTO through which this challenge is being met, the paper will outline this process and successes to date.

ENTWICKLUNG/FÖRDERUNG VON RADVERKEHRSANLAGEN IN DUBLIN

In Dublin gab es bis 1995 keine nennenswerten Radverkehrsanlagen, keine Regierungspolitik für den Fahrradverkehr, keine Vorschläge für ein Radwegenetz in der Stadt und ihrer Umgebung und keine Richtlinien für die Entwicklung von Radverkehrsanlagen. Unser Land hatte keinerlei Erfahrung in der Konstruktion von Radverkehrsanlagen, keine Gesetzgebung und keine Bestimmungen für den Fahrradverkehr und keine Regierungsbehörde, die sich aktiv bemühte, die Entwicklung von Radverkehrsanlagen zu fördern.

Gleichzeitig nahm die Anzahl der Radfahrer, die morgens während der Hauptverkehrszeit mit dem Rad zur Arbeit fahren rapide ab: von 8,000 im Jahr 1988 auf 6,000 im Jahr 1994. Auch die Anzahl derer, die in Dublin mit dem Rad zur Arbeit fahren, sank von 100,000 pro Tag im Jahr 1961 auf 22,000 pro Tag im Jahr 1994 (heute etwa 5%).

Das Dublin Transportation Office (DTO) sah sich mit folgenden Herausforderungen konfrontiert:

- Wiedereinführung des Fahrrads als Verkehrsmittel
- Berücksichtigung des Radfahrens in der öffentlichen Planung
- Entwicklung starker Fahrradphilosophien innerhalb der Behörden

Das DTO hat eine Reihe von Mechanismen etabliert, mit deren Hilfe diese Herausforderungen angenommen werden. Das Referat gibt einen Überblick über den Prozeß und die bisher erzielten Erfolge.

RAZVOJ IN PROMOCIJA KOLESARSKA INFRASTRUKTURE V DUBLINU

Pred letom 1995 ni bilo v Dublinu nobene pomembne kolesarske infrastrukture, nobene vladne kolesarske politike, nobenega predloga kolesarskega omrežja poti v mestu in okolici, nobenih navodil in nobenega strokovnega znanja za načrtovanje kolesarske infrastrukture, nobene zakonodaje, ki bi pokrivala kolesarjenje, nobene vladne agencije, ki bi promovirala kolesarjenje.

V istem času je število vozenj na delo s kolesom v jutranjih konicah upadlo od 8000 v letu 1988 na 6000 v letu 1994. Število kolesarjev na delo se je v Dublinu zmanjšalo s 100.000 na dan v letu 1961 na 22.000 na dan v letu 1994.

Prometni urad v Dublinu (DTO) je bil postavljen pred naslednje naloge:

- ponovno uveljaviti kolo kot način prevoza
- vrniti kolesarjenje na "dnevni red" javnosti in
- razviti močno kolesarsko filozofijo v agencijah.

DTO je razvila vrsto mehanizmov, ki so pomagali pri reševanju navedenih nalog. Članek predstavlja način reševanja problemov in rezultate.

BICYCLE PROMOTION IN DUBLIN

INTRODUCTION:

In 1995 an integrated transportation Strategy called the Dublin Transportation Initiative (DTI) was adopted by Government. The DTI is an integrated strategy, which recognises the need to redress the decline in cycling.

The DTI identified the viability of cycling as a sustainable mode of transport, particularly for the commuter, and as one of the tools in our toolbox of measures to tackle the transportation problems in Dublin.

Before the adoption of the DTI there were

- No significant cycle facilities in Dublin,
- No Government Policy on cycling,
- No cycle network proposal for the city and its environs,
- No guidelines for the design of cycle facilities,
- No expertise in the country in the design of cycle facilities,
- No legislation / regulations covering cycling,
- No Government agency actively promoting the development of cycling facilities.

At the same time there was a rapid decline in the numbers of cyclists crossing the Canal Cordon during the morning peak hour - from 8,000 in 1988 to 6,000 in 1994. Also the numbers cycling to work in Dublin changed from 100,000 per day in 1961 to 22,000 per day in 1994 (accounts for 5% approximately to day)

-The challenge facing the Dublin Transportation Office (DTO) was to:

- bring the bicycle back as a mode of transport,
- put cycling on the public agenda and,
- develop strong cycling philosophies within the agencies.

A number of mechanisms have been put in place by the DTO through which this challenge is being met as follows:

STRATEGIC CYCLE COMMITTEE :

Established in July 1996 a broad based committee which involved all the obvious players such as the local authorities, the Department of the Environment the Police. But we also involved some of the not so obvious players like the National Road Authority, Department of Arts Culture and Heritage, Public Transport Carriers, and a cyclists user group. The remit of the Committee was as follows:

- To oversee the development of an integrated cycle network to be developed by each local authority within its respective area resulting in a Strategic Cycle Network for the DTI area.
- To approve all cycle design proposals from the local authorities.
- To make recommendations to the DTO for the funding of cycle facilities.
- To liaise with cycle user groups and the Consultative Panel.

The Committee completed a number of vital projects in 1997

THE DTI CYCLE ROUTE NETWORK

A network of 180km. was identified, focusing on the journey to work and the potential for modal shift. It is a viable cycling plan for the city and its environs that will encourage those who presently cycle and also entice others to use cycling for everyday travel needs.

A local network of 400KMs was also developed and a Safe Routes To School pilot project commenced in each of the 4 Dublin Local Authority areas

Provision for implementation of these new cycle facilities has been made available through funding from the DTO Traffic Management Grants (E.U.-co-funded) £15.5 million over the period 1998 - 2000

THE CYCLE FACILITIES DESIGN GUIDELINES MANUAL

This is a comprehensive guide to all aspects of the design of cycle facilities in urban areas. It is an essential tool for local authority engineering and planning staff and for consultants involved in the design and implementation of these facilities. It is a unique engineering manual in that it is set within a design philosophy which recognises the competing demand for road space and accepts that the car is not always dominant:

"the designing of a cycle facility demands a basic insight into the interaction between the bicycle, cyclists, cycle facilities and the requirements of other transport modes. Only with this insight can the designer choose the right design for complex traffic situations with constantly changing conditions."

The manual is based on best practise in The Netherlands and is, therefore, a proven success in the provision of safe, secure cycle facilities. It will help to ensure that there is a consistent and uniform approach to the provision of facilities. It is also geared towards ensuring that cycling will be safe and comfortable and that there is a continuity of facilities along routes. It will be used as a national manual for urban areas.

Both the DTI Cycle Route Network and the Cycle Facilities Design Manual were launched by Mr. Noel Dempsey, Minister for the Environment and Local Government on Thursday Dec 4th 1997. In his speech Mr. Dempsey said:

"Cycling is the most sustainable of all transport modes. It is the most energy efficient form of transport, it is environmentally friendly and contributes to fitness and health.

It is right, therefore, that Dublin should, like many other major cities, promote a return to the use of the bicycle. To do this, we need arrangements which allow bicycles their fair share of public road space and which enhance the safety of cyclists"

V CYCLE LEGISLATION

The Committee identified Regulatory changes required to reinforce the higher profile it is intended to achieve through the implementation of a transport system for cyclists. The Dept. of the Environment and Local Government following the development of the National Cycle Facilities Manual have made the following changes to existing regulations to provide for:

- On road cycle tracks with broken white line,
- Mandatory use of cycle tracks
- Timed facilities for servicing/loading from cycle tracks
- Cycle tracks through junctions, incl signalised junctions
- Contra flow cycle tracks,
- Advance stop lines,
- Toucan Crossings,
- Weaving lanes.

DG XVII SAVE II PROGRAMME:

The DTO is currently being considered for inclusion in the above SAVE II Programme representing Dublin as one of the 6 collaborating cities in order to further develop the area of Cycle Promotion in Dublin.

CONCLUSION:

The combined impact of the above measures, coupled with promotion of cycling, is estimated to double commuter travel by cycle in Dublin from the current level of 5% to 10% over the next five years.

THE BICYCLE AGREEMENT OF ANTWERP

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He worked eight years for the automobile organisation VTB-VAB, was a teacher for one year, was three years housefather and works now four years for the Fietsersbond, which is the bicycle user organisation of Flanders. He was one of the founders of this organisation.

THE BICYCLE AGREEMENT OF ANTWERP

Antwerp is a town with about 450.000 inhabitants. For the economy of the town is traffic the most important function, because Antwerp has a very big harbour (Top ten in the world top). For the cyclists there where many problems because the policy of the town was a car policy. Beside that was the responsibility for different roads and parts of the town split up between the city council, the province, the Flemish Government and the Belgium government. Belgium is a federal state). It was very difficult to deal for the Fietsersbond with all these different partners, with all there different visions and plans.

Due to the contacts we had by being candidate to host a Velo-City conference, we could push them to sign an agreement between the Belgian and Flemish government, the Province and the City of Antwerp and the Fietsersbond. They all wrote down what they would do for the cyclists, and promised to cooperate. A year later there came an update and a new partner in the agreement : the public transport company.

The Agreement worked, but this year there will come a hard evaluation, because elections will be hold, and a new input is necessary.

DER RADVERTRAG VON ANTWERPEN

Antwerpen ist eine Stadt mit etwa 450.000 Einwohnern. Für die Wirtschaft der Stadt ist der Verkehr die wichtigste Funktion, da Antwerpen einen sehr großen Hafen (einen der zehn größten der Welt) besitzt. Für die Radfahrer gab es viele Probleme, da die Politik der Stadt auf den KFZ-Verkehr ausgerichtet war. Außerdem war die Verantwortlichkeit für die verschiedenen Städte und Stadtteile zwischen dem Stadtrat, der Provinz, der flämischen Regierung und der belgischen Regierung aufgeteilt. (Belgien ist ein Bundesstaat.) Für den Fietsersbond war es sehr schwierig, mit all diesen verschiedenen Partnern zu Rande zu kommen, die jeweils unterschiedliche Visionen und Pläne hatten.

Aufgrund der Kontakte, die wir hatten, da sich unsere Stadt um die Veranstaltung einer Velo City-Konferenz beworben hatte, konnten wir die Unterzeichnung eines Vertrags zwischen der belgischen und der flämischen Regierung, der Provinz, der Stadt Antwerpen und dem Fietsersbond durchsetzen. Die Vertragspartner schrieben nieder, was sie für die Radfahrer zu tun beabsichtigten, und versprachen Zusammenarbeit. Ein Jahr später folgte eine Aktualisierung, und ein neuer Vertragspartner kam hinzu: der öffentliche Verkehrsbetrieb.

Der Vertrag funktionierte, doch dieses Jahr wird er auf eine harte Probe gestellt, da Wahlen ins Haus stehen und neuer Input erforderlich ist.

KOLESARSKI SPORAZUM MESTA ANTWERP

Antwerp je mesto s približno 450.000 prebivalci. Za gospodarstvo mesta je promet ena najpomembnejših funkcij, saj ima Antwerp zelo veliko pristanišče (je na lestvici desetih največjih svetovnih pristanišč). Kolesarji so se srečevali z mnogimi problemi, saj je bila politika mesta avtomobilska politika. Poleg tega se je odgovornost za različne ceste in dele mesta razdelila med mestni svet, provinco, flamsko vlado in belgijsko vlado (Belgija je zvezna država). Tako je bilo Fietserbond-u zelo težko delati z vsemi temi različnimi partnerji, z vsemi različnimi vizijami in načrti.

Zaradi stikov, ki smo jih imeli kot kandidati prirejene konference Velo-City, smo lahko prignali k podpisu sporazuma belgijsko in flamsko vlado, provinco in mesto Antwerp ter Fietserbond. Vsi so napisali kaj vse bodo naredili za kolesarje ter obljubili sodelovati. Leto kasneje je k sporazumu pristopila nova partnerica : javno prevozno podjetje.

Sporazum je pričel veljati, čeprav bo do pravega vrednotenja prišlo letos, saj bodo volitve in tako bo potreben novi vložek

THE BICYCLE AGREEMENT OF ANTWERP

1. INTRODUCTION

Antwerp is the biggest city in the Flemish part of Belgium. There is a world harbour, and it is a very important cross point of traffic. For Antwerp mobility is a question of live or dead.

In this situation the bicycle users have it very hard to be heard. Although the use of the bicycle could bring a great part of the solution of sustainability and it could stop the traffic jam.

One of the problems was that three different authorities are involved by roadplanning : the city council, the Province and the Flemish government. To change the traffic law we need the Belgium government. All these bodies were acting alone, sometimes doing the same things without knowing from each other.

The Fietsersbond in 1995, liked to get the Velo-City conference of 1999 in to Antwerp, so we asked all the authorities to support us for this project.

2. FIRST STEP

We had several meetings together with representatives of the City, the Province and the Flemish and Belgium government. We talked about how to get the conference to Antwerp, what to present, and in between people talked about the problems on their level.

Suddenly there clicked something at the moment they were comparing two plans of bicycle routes, and they saw that two different bodies were doing the same thing, like the Fietsersbond has tolled theme before. Then they agreed that this was stupid. So the idea was launched to make a contract between all the parties, including the Fietsersbond.

3. THE AGREEMENT

In the contract, every authority and the Fietsersbond says what they will do to come to more cycle use in Antwerp, and they promise to work together in the same direction. Beside that we have every month a meeting to discuss progress, problems and new ideas.

At the Bicycle party in May, the contract was officially signed. It was unique because it was the first contract in Belgium where a private group

(The Fietsersbond) could decide together with the authorities what to do about cycling. Now it is a system from the Flemish government. They only work at infrastructure if the city where things happen signs a contract.

4. PROBLEMS

The agreement worked good for three years. Now it is necessary to renew it. Most important reason for that is the problems in the coalition of the City of Antwerp. It is made out of five parties and you can understand that they not always see things in the same way. The agreement should now be renewed or stopped, because in the mean time as said before the Flemish government makes contracts with all cities for mobility planning in general, and Antwerp is making this to.

5. CONCLUSION

Bringing different partners round the table for a project was a good way to put all the noses in the same direction. It was a good way to cycle faster in the right direction, and without it we would have stand at the same place where we already were in 1995.

DEVELOPING THE GLASGOW CYCLE NETWORK - STRATEGY TO REALITY

Allan Maclean

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ENGLISH

DEVELOPING THE GLASGOW CYCLE NETWORK - STRATEGY TO REALITY

Implementation of a 375 kilometre city-wide network of cycle routes, is the challenging, but achievable task, embraced by Glasgow City Council.

Assistance by City Councillors has been integral to the development of the network plan, hence a close partnership between City Councillors and Council officials has been formed. By working in partnership and by instigating an extensive consultation process, it is hoped that the city-wide facility will truly be a citizens' network.

The poster highlights the proposed cycling infrastructure which will be completed over a 7-10 year period with the aim of achieving 100 kilometres by 2001. The provision of a comprehensive cycle route network is considered a key element in the Council's strategy to double cycle use by 2002 and quadruple cycle use by 2012.

DEUTSCH

DIE ENTWICKLUNG DES RADWEGENETZES VON GLASGOW - VON DER STRATEGIE ZUR WIRKLICHKEIT

Die Implementierung eines 375 Kilometer langen, stadtweiten Netzes von Radstrecken ist die ehrgeizige aber durchaus zu bewältigende Aufgabe, die sich der Stadtrat von Glasgow gestellt hat.

Die Unterstützung der Stadträte war unerlässlich für die Planung des Netzes, und deshalb wurde eine enge Partnerschaft zwischen Stadträten und Beamten der Stadtverwaltung gebildet. Durch partnerschaftliche Zusammenarbeit und Initiierung eines umfangreichen Konsultationsprozesses hofft man, gewährleisten zu können, daß die stadtweite Einrichtung wirklich ein Netz für die Bürger werden wird.

Das Poster gibt Auskunft über die vorgeschlagene Radverkehrsinfrastruktur, die in einem Zeitraum von 7 bis 10 Jahren fertiggestellt werden soll, wobei bis 2001 bereits 100 Kilometer vorhanden sein sollen. Die Schaffung eines umfangreichen Radstreckennetzes gilt als Schlüsselement jener Strategie, mit deren Hilfe die Stadtverwaltung den Fahrradverkehr bis 2002 verdoppeln und bis 2012 vervierfachen möchte.

SLOVENSKO

RAZVOJ GLASGOW-SKE KOLESARSKE MREŽE - OD STRATEGIJE K REALNOSTI

Mestni svet Glasgow-a je sprejel izvedbo 375 kilometrov, po mestu razprostranjene, mreže kolesarskih poti, kar je izzivalna, a izvedljiva naloga.

Pomoč mestnih svetnikov je bila celostna, kar zadeva razvoj omrežnega načrta; od tod je prišlo do tesnega sodelovanja mestnih svetnikov in mestnih uradnikov. S partnerskim delom in obširnimi posvetovalnim procesom upamo, da bodo razširjene mestne kapacitete tudi resnično omrežje prebivalcev.

Prispevek poudarja predlagano kolesarsko infrastrukturo, ki naj bi bila končana v obdobju 7 - 10-ih let, s ciljem pridobitve 100-ih kilometrov do leta 2001. Ukrep obsežne kolesarske mreže je ključni element strategije občinskega odbora, ki želi podvojiti kolesarjenje do leta 2002 in ga početriniti do leta 2012.

WEDNESDAY

DEVELOPING THE GLASGOW CYCLE NETWORK - STRATEGY TO REALITY

BACKGROUND

Glasgow is a municipal city situated in the heart of a conurbation of 1.8 million people of which it is the main commercial centre. Three of Scotland's National Cycle Routes emanate from the city centre. Whilst these routes provide safer corridors to traverse the conurbation, a more comprehensive network of routes is required within Glasgow itself, if the city's 611,660 population is to have convenient cycle access throughout the city's 177 sq kms.

Although formerly a popular method of transport, cycling in Glasgow almost completely died out during the last fifty years. Since the mid-80's however, the public's response to local cycling initiatives, has indicated that there is an interest in returning to benign methods of transport.

Interfacing with the public, via local Councillors and promotional campaigns, is the catalyst in the process of encouraging the public to accept sustainable transport and as such is therefore an integral part of the strategy to achieve a 'Glasgow Cycle Network'.

THE NETWORK

The Council's internal 'Cycling Working Group' was established in order to ensure that all Council Departments would have a consistent approach to the development of cycling.

The aims of the working group are:-

- To co-ordinate cycling policies within the Council
- Encourage and promote cycling
- Establish the 'Glasgow Cycle Network' and create a cycle-friendly infrastructure
- Secure funding for cycling
- Promote cycle research and development

The above aims are to be achieved within the framework of the Council's draft transport strategy 'Keep Glasgow Moving' and by implementation of the National Cycling Strategy, which has set a target of doubling cycle use by 2002.

The network plan is based on a hierarchy of cycle routes, each offering different types of facilities and requiring different levels of competence.

Strategic Routes

Strategic routes such as the National Cycle Network dual as both leisure facilities and as commuter routes. Typical features include dismantled railways which have been converted to cycle tracks, off-road paths, river walkways, canal towpaths, minor roads, etc. The principal routes are Glasgow to Inverness (via Loch Lomond), Glasgow to Carlisle (via the Clyde Coast) and Glasgow to Edinburgh. Given their mainly car free nature, the routes are of particular interest to families wishing an enjoyable day's cycling and are ideal for novice cyclists who wish to develop their cycling ability, prior to tackling commuter routes.

Commuter Routes

Commuter routes normally provide more direct access from peripheral towns and suburbs than the National Cycle Network since they are predominantly on-road. Cycle lanes are common and the routes often link with strategic routes or Route Action Plans. Although the routes are aimed at bringing cyclists into the City Centre, the routes are also of use to cyclists travelling between communities along its length.

Route Action Plans

Several of Glasgow's arterial roads are being converted to Bus, Taxi, Cycle and Pedestrian priority corridors. These major traffic management schemes fulfil a key role in the cycle network since they are normally direct and comprise numerous facilities for cyclists along their length. In total, 18 Route Action Plans will be developed, with sixteen kilometres installed already. Route Action Plans are aimed at the more experienced commuting cyclist, who cycles to or from the City Centre on a daily basis.

Other major traffic management schemes include the City Centre Millennium plan which aims to reduce traffic in the core by at least 30%, provide 12 kilometres of signed cycle route through the City Centre and achieve or better European Union standards for noise and air pollution.

Local Access

The remainder of the network comprises of a multitude of routes, aimed at improving local access within communities. Cycle exemptions at road closures, shared pedestrian/cycle paths and the use of minor roads which have been signed are some of the typical features which would form part of a local network.

Safer Routes to School

Glasgow City Council has installed 5 Safer Routes to School as part of the Fit for Life Project and are about to install further routes at 6 more Glasgow schools, 4 of which are Primary Schools. These routes are due to be completed by August 1999.

The Fit for Life Project is aimed at improving quality of life by encouraging physical activities and creating a cleaner and safer environment through a modal shift from travel to work or school by private vehicles to walking and cycling or a combination of these, with public transport. In schools it uses the Scottish 5 to 14 curriculum to plan Safer Routes to School, to change the attitudes amongst pupils away from thinking that the car is the only form of personal transport to strive for. It also re-emphasises the valuable and essential road safety message in a secondary school environment and addresses the following concerns:-

- The alarming increase in car to school trips
- Perception of road danger
- Perception of personal danger
- Worsening Fitness and Health Record.

The Fit for Life project was brought about by a partnership consisting of:-

- Glasgow City Council (Land Services and Education)
- University of Glasgow
- Strathclyde Passenger Transport
- Greater Glasgow Health Board

This unique partnership brought about by this project brings together various professionals with expertise in a variety of fields and it is hoped that the benefits from such a collaboration could, in the long term, have as great an impact on today's public health as did the engineering successes of yesteryear. Such a diverse partnership is unique in both the UK and in Europe.

CONSULTATION

Following Committee approval, a two-stage consultation process was instigated, aimed at encouraging diverse support for the network. From the outset, seeking the support of local cyclists was seen as paramount to the success of the venture, hence local cycle-user groups were consulted first. Many of the routes which formed the final network were recommended by members of these organisations.

With the support of cycle-user groups assured, the draft network proposals were sent to Community Councils and other interested agencies, for example, the Chamber of Commerce, so that the public and business community could have an input to what will become their network.

The City's neighbouring councils were also sent a copy of the network in order that routes can be extended beyond the City Council boundary. Much of Glasgow's commuting traffic originates from residential suburbs outside the city. Car ownership within the city is at 33.4% compared to 46.8% in West Dunbartonshire, 53.1% in Renfrewshire, 53.1% in North Lanarkshire, 59.3% in South Lanarkshire, 75% in East Dunbartonshire and 75.2% in East Renfrewshire. Continuing the routes beyond the city boundary also provides better access to the surrounding countryside. Glasgow is within easy cycling distance of Loch Lomond and the Clyde Coast where there is good ferry links to Arran, Bute and other islands

of outstanding natural beauty. A frequent and comprehensive rail service is also available locally which offers free carriage of bicycles, hence journeys combining cycling and rail travel are easily achieved.

By the end of the consultation process, a creditable plan amounting to some 375 kilometres had been derived. The density of the proposed network ensures that cyclists have ease of access throughout the city, since for most of the population, the network is less than half a kilometre away.

IMPLEMENTATION

It is expected that the network will be completed over a 7-10 year period and will require to be funded predominantly by the Council, although external funding will also be sought. In particular, development sites which are on, or adjacent to any route on the network, will be required to provide appropriate cycle access and facilities. A target of 100kms by 2001 is considered realistic to coincide with the proposed hosting in that year of the Velo-city conference. To date, 42kms have been installed and the Council has allocated a 'Sustainable Transport' budget to fund the phased implementation of the remainder of the network.

In addition to the physical construction of the network, the Council continues to promote cycling via:-

- The publication of Route Guides/ Overview Leaflets
- Public Awareness Campaigns
- Launches/ Advertisements/ Co-operation with the Press & Media

RECOMMENDATION - LEAD BY EXAMPLE

To encourage a transition from dependence on the private motor car and thereby achieve the targets stated in the National Cycling Strategy, several Councillors, such as the Convener of the Roads & Transportation Committee, regularly cycle to the City Chambers. Cycle parking racks for staff have replaced two car parking places, formerly used by senior Roads Department management. The Council has approved the development of a 'Green Commuter Plan' for staff and a Bicycle Users Group (BUG) for staff has been established. The 'Green Commuter Plan' includes provision for the payment of cycle allowances to staff. A programme of installing shower, drying and locker facilities is already underway.

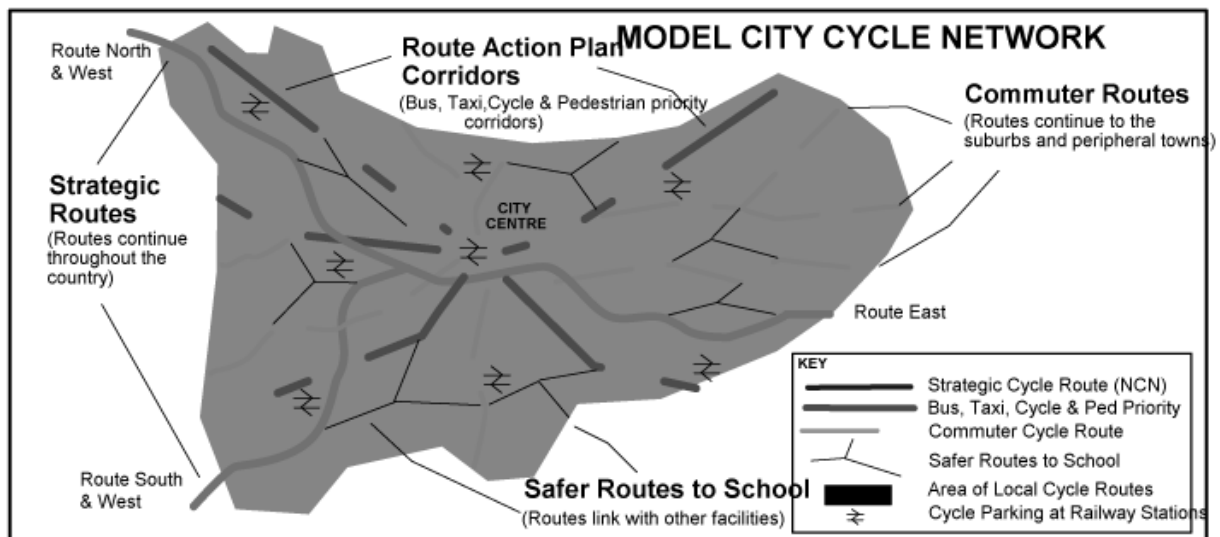


Fig.1 Model City Cycle Network

Photographs

1. Local Access
2. Public transport priority
3. National Cycle Route
4. Commuter Route



URBAN MOBILITY IN THUN

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URBAN MOBILITY IN THUN

In 1997 the Bern section of the Swiss traffic club launched the project „City Mobility“ in Thun, the general motto being „On the road together“.

Cross-border cooperation with the association IG Velo Region Thun, the city council, local trade, the Swiss Railway Corporation and other organisations is expected to achieve the following objectives:

- Improvement of traffic safety
- Promotion of non-motorised traffic, a traffic culture based on togetherness
- Promotion of local trade

The following focal points were identified:

BICYCLE STATION

In a central position at the railway station of Thun a guarded bicycle parking facility with different services was opened in 1998. A home delivery service operated by a bicycle carrier company is envisaged.

BICYCLE CONNECTION FOR THE RIGHT BANK OF LAKE THUN

Different approaches have been developed. A project is now elaborated on the basis of consultations with the communities and people concerned.

ELIMINATION OF ACCIDENTS CAUSED BY THE „BLIND SPOT“

A campaign (new mirrors for lorries and light signalling equipment, information and improved traffic structures and traffic engineering) is launched to reduce the number of these severe accidents in the region of Thun.

Intensive PR work will accompany the project throughout.

STADTMOBILITÄT THUN

Die Sektion Bern des Verkehrs-Club der Schweiz (VCS) lancierte 1997 das Projekt „Stadtmobilität“ in Thun, unter dem Motto „Miteinander unterwegs“.

In grenzüberschneidender Zusammenarbeit mit der IG Velo Region Thun, der Stadtbehörde, dem Gewerbe, der SBB sowie anderen Organisationen sollen folgende Ziele erreicht werden:

- Verbesserung der Verkehrssicherheit
- Förderung des nichtmotorisierten Verkehrs, der Verkehrskultur des Miteinander
- Unterstützung des lokalen Gewerbes

Es entwickelten sich folgende Schwerpunkte:

VELOSTATION

An zentraler Lage am Bahnhof Thun wurde 1998 eine bewachte Veloabstellanlage mit verschiedenen Dienstleistungen eröffnet. Ein Hauslieferdienst mit dem Velokurier ist geplant.

VELOVERBINDUNG RECHTES THUNERSEEUFER

Wir erarbeiteten verschiedene Lösungsansätze. Dank Gesprächen mit den Gemeinden und Betroffenen wird jetzt ein

ENGLISH

DEUTSCH

Projekt ausgearbeitet.

ELIMINIERUNG DER "TOTE WINKEL"-UNFÄLLE

Mit einer Kampagne (neue Spiegel an Lastwagen und Lichtsignalanlagen, Informationen und mit baulichen und verkehrstechnischen Verbesserungen) wird in der Region Thun eine Verbesserung dieser verheerenden Unfälle angestrebt.

Eine intensive Öffentlichkeitsarbeit begleitet das Projekt.

"MESTNA MOBILNOST" V MESTU THUN

Sekcija Bern, ki je del Prometnega kluba Švica (VCS) je leta 1997 lansirala projekt "Mestna mobilnost" v Thunu, z geslom "Skupaj na poti".

V sodelovanju z IG Velo Region Thun, mestnimi oblastmi, obrtjo SBB ter ostalimi organizacijami želimo doseči naslednje cilje:

- izboljšanje prometne varnosti
- pospeševanje nemotoriziranega prometa in dvig prometne kulture
- podpora lokalni obrti

Izoblikovale so se naslednje žariščne točke:

Kolesarska postaja:

Na osrednji legi, na železniški postaji v Thunu, je bila leta 1998 odprta varovana postaja za kolesa, ki nudi različne storitve. Načrtujemo tudi službo za dostavo na dom s kolesarskim kurirjem.

Kolesarska povezava z desnim bregom jezera Thurnsee

Razmišljamo o različnih rešitvah. Zahvaljujoč pogovorom z občinami in prizadetimi je v izdelavi projekt.

Eliminacija nesreč "mrtvi kot"

V pokrajini Thun težimo s kampanjo (nova ogledala na tovornjakih in naprave za svetlobno signalizacijo, informacije ter gradbene in prometno-tehnične izboljšave) k preprečevanju teh usodnih nesreč.

Projekt spremljajo intenzivni stiki z javnostjo.

STADTMOBILITÄT THUN

PROJEKT

Im Frühling 1997 hat die Sektion Bern des Verkehrs-Club der Schweiz (VCS) das Projekt „Stadtmobilität“ in Thun lanciert. Unter dem Motto „Miteinander unterwegs“ wollten wir in der Stadt Thun agieren statt reagieren.

In Zusammenarbeit mit der IG Velo Region Thun, den Behörden der Stadt, den umliegenden Gemeinden, dem Gewerbe, den SBB (Schweizerischen Bundesbahnen) sowie anderen Organisationen sollen namentlich folgende Ziele erreicht werden:

- Förderung des nichtmotorisierten und öffentlichen Verkehrs
- Verbesserung der Sicherheit im Verkehr
- Förderung einer Verkehrskultur des Miteinander
- Attraktivierung der Innenstadt und der Ortszentren als Einkaufsort, der Agglomeration als Wohnort
- Unterstützung des lokalen Gewerbes, Auslösung von wirtschaftlichen Impulsen
- Förderung des sanften Velotourismus.

Die ersten Schritte für uns waren, mit offenen konstruktiven Gesprächen, Gemeinsamkeiten mit den oben erwähnten Institutionen zu finden. Ein gemeinsamer Ausflug mit Gewerbevertretern, half „Berührungsängste“ abzubauen.



SCHWERPUNKTTHEMEN

Es kristallisierten sich bald 3 Schwerpunktthemen heraus, die im folgenden Text näher beschrieben werden:

- Velostation am Bahnhof Thun
- Veloverbindung rechtes Thunerseeufer
- Eliminierung der „Tote Winkel“ Unfälle

ÖFFENTLICHKEITSARBEIT

Neben verschiedenen Standaktionen, wo wir das Projekt vorgestellt haben, ist der Kontakt zur Presse ein wichtiger Bestandteil des Projekts. Eine lokale Zeitung begleitet das Projekt mit einer fortlaufenden Reportageserie

Die Finanzierung, konnte nur dank der tatkräftigen Unterstützung der Stadt, dem Kanton sowie dem Gewerbe aufgebracht werden.

Dank guter Kommunikation der Projekte und Mithilfe vieler freiwilligen Personen stellte sich der Erfolg ein.



WEITERE PROJEKTTHEMEN

Begegnungsstrasse

Mit einer aktiven Anwohnergruppe wird versucht ihre Quartierstrasse für Begegnungen zurückzugewinnen. Begegnungsstrassen (Wohnstrassen light) ist eine neue Möglichkeit mit wenig Finanzen und beweglichem Mobiliar die Strasse sicherer zu gestalten.

City Cargo Thun

Mit den Nutzfahrzeugunternehmer und den Stadtbehörden wird versucht die Lastwagenfahrten in die attraktive Innenstadt von Thun zu reduzieren.

Hauslieferdienst

In Zusammenarbeit mit dem Velokurier, dem Gewerbe und der Stadtbehörden wird ein Hauslieferdienst für Alltagseinkäufe aufgebaut. Diese Dienstleistung soll für die BenutzerInnen gratis sein.

VELOSTATION AM BAHNHOF THUN

Ausgangslage

In Thun hat das Velo traditionell eine grosse Bedeutung, im Arbeitsverkehr hat es sogar den grössten Anteil aller Schweizer Städte. Der Wunsch nach Velodienstleistungen steigt. Leider steigen auch der Vandalismus und die Diebstähle.

Thun ist ein Kreuzungspunkt von zwei nationalen Velowanderwegen und liegt im Velotourismusgebiet von „SimmeSaaneSee“.



Projekt

Dank der guten Zusammenarbeit mit den Behörden der Stadt Thun dem Velogewerbe und der SBB (Schweizerischen Bundesbahn) entstand im Mai 1998 eine Velostation für 250 Velos. Die Velostation wird als Stellenlosenprojekt von der Stadt betrieben. Der Standort an der Rampenstrasse liegt nahe an den Perrons und ist publikumsnah. Schon im Herbst 1998 war die Belegung der Velostation schon über 200 Velos was die Erwartungen bei weitem übertreffen.

Dienstleistungen

- Bewachte Aufbewahrung von Velos (Zahlungspflichtig)
- Voreinigung und kleine Reparaturen
- Veloabschleppdienst
- Öffnungszeiten von ersten bis zum letzten Zug
- Informationszentrum für Velotourismus und Veloanliegen
 - Abgabe von unpersönlichen Generalabonnamenten

VELOVERBINDUNG RECHTES THUNERSEEUFER

Seit Jahren ist die gefährliche Verbindung rechtes Thunerseeufer ein viel diskutiertes Thema in der regionalen Verkehrspolitik. Vor ein paar Jahren wurde das Velofahren auf dem Aarequai auf einer Teilstrecke erlaubt. Eine Beschwerde verhinderte eine weitergehende Öffnung. Die Benützung des Aarequais in Thun hat sich mehrheitlich bewährt.

Die Gefährlichkeit auf der Hofstettenstrasse nahm in den letzten Jahren weiter zu.

Projekt

Stadtmobilität Thun erarbeitete verschiedene Lösungsansätze und stellte diese zur Diskussion.

Dank Gesprächen mit den Gemeinden, Betroffenen und den Berner Wanderwegen (Einsprecher), konnte eine Bereitschaft für eine Problemlösung gefunden werden. Koexistenz und Rücksichtnahmen auf die Fussgängeranliegen sind ein wichtiger Bestandteil einer neuen Lösung.

Weiteres Vorgehen

Die Stadt Thun erarbeitet nun einen konkreten Vorschlag um die Benützung des Aarequais für Velofahrer zu verlängern.



Aktuelle Situation an der Hofstettenstrasse!



So sollte es sein

ELIMINIERUNG DER "TOTE WINKEL" UNFÄLLE

Ausgangslage

Mit erschreckender Regelmässigkeit erreichen uns Meldungen über Unfälle, bei denen Velofahrende von einem rechtsabbiegenden Nutzfahrzeug angefahren oder überrollt wurden, weil sie sich im sogenannten "toten Winkel" des Fahrzeuges befanden.

Die Unfallproblematik ist bekannt: Trotz installierten Haupt- Weitwinkel und Rampenspiegeln sieht der Chauffeur insbesondere den Bereich der vorderen rechten Ecke seines Fahrzeuges nicht.

Bei unsere Arbeit entdeckten wir den Towispick (Totewinkelspiegel). Dies war der Beginn eines Projektes das sich zu einer Kapagne entwickelte.

Projekt

Mit einem Massnahmenpaket wird versucht die Unfälle zu vermeiden:

- Seit Weihnachten 1997 fahren in der Region Thun Nutzfahrzeuge von fünf Transportunternehmungen sowie ein Kehrlichfahrzeug des städtischen Tiefbauamtes mit einem TOWISPICK zu Testzwecken herum. Die Rückmeldungen waren sehr positiv und es wurden weitere 20 Nutzfahrzeuge nachgerüstet.
- Ende Oktober 1998 wurde bei sämtlichen Lichtsignal- Anlagen in der Region Thun beheizbare Trixi-Spiegel montiert. Diese ermöglichen den Chauffeuren den ganzen Bereich vor und rechts neben seinem Nutzfahrzeug vollständig zu überblicken.
- Bauliche und markierungstechnische Massnahmen an Gefahrenstellen: z.B. vorgezogene Haltebalken, aufgeblasene Radstreifen. Eine Kreuzung in Thun wird im Sommer 1999 nach diesen Grundsätzen saniert.
- Reduktion von Lastwagenfahrten durch Wohngebiete und in die Innenstadt durch ein koordiniertes Zuliefersystem (Projekt City Cargo Thun)
- Durch gezielte Informations- und Öffentlichkeitsarbeit, werden insbesondere Schulkinder und Chauffeure sensibilisiert und auf die besonderen Gefahren durch rechtsabbiegende Nutzfahrzeuge aufmerksam gemacht werden. Die

Verkehrsinstruktoren informieren regelmässig über diese Problematik.

- Eine Broschüre informiert ausführlich über alle Massnahmen und liefert detaillierte Hintergrund-information die ganze Kampagne.



Der Towspick



Die Velofahrer haben Vortritt

STRATEGIES OF URBAN TRANSPORTATION ON THE WAY OF HUMANISATION IN LITHUAINIA

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STRATEGIES OF URBAN TRANSPORTATION ON THE WAY OF HUMANISATION IN LITHUAINIA

On the way of humanisation urban transport needs to change the main priorities in this sequences:

1. Pedestrians. 2. Bicycles. 3. Public transport. 4. Service transport 5. Personal cars.

The Department of Urban Engineering carried out the public opinion polling by the help of filling in the questioning forms in order to evaluate what part of population is using the bicycle, what are the main purposes of riding, what are the reasons preventing the use of the bicycle. The data of this questioning helped to establish the reverse connection between the size of the city and the bicycle usage in it, i.e. the bigger the city the lower the level of the bicycle usage. This connection is complicated and multiple and it is influenced by such factors as the level of automobilization, demographic structure of the population, the distances between the specialized districts of the cities, the relief of the locality.

Other important aspects :

1. Development of it to keep public transport.
2. Assurance equal competition between state and private drivers.
3. Permanent improvement of urban public transport routes network for keepin, present inhabitants public transportation level of service.

Lithuania needs to change the main priorities and to made more careful evaluation of urban environment. Market economy allows for inhabitants to choose the best way for daily transportation, but restriction of capacity of urban streets network create many problems: lack of time, delay in peak hours, noise, air pollution, traffic accidents.

DEUTSCH STRATEGIEN FÜR DEN STÄDTISCHEN VERKEHR AUF DEM WEGE ZU EINEM MENSCHENFREUNDLICHEREM VERKEHRSWESEN IN LITAUEN

Auf dem Wege zu einem menschenfreundlicheren Verkehrswesen müssen in Litauen die Prioritäten im städtischen Verkehr neu gereiht werden wie folgt:

1. Fußgänger, 2. Fahrräder, 3. Öffentlicher Verkehr, 4. Güterbeförderung, 5. Private PKW.

Die Abteilung für Stadtplanung hat eine öffentliche Meinungsumfrage durchgeführt, in deren Rahmen Fragebögen ausgegeben wurden, um festzustellen, wie groß der Anteil der Bevölkerung ist, der mit dem Rad fährt, zu welchen Zwecken hauptsächlich mit dem Fahrrad gefahren wird und was vom Gebrauch des Fahrrads abhält. Die Daten aus dieser Fragebogenaktion halfen, das umgekehrt proportionale Verhältnis zwischen der Größe einer Stadt und ihrem Fahrradverkehr festzustellen, d.h. je größer die Stadt, desto weniger Fahrradverkehr. Diese Verbindung ist komplex und facettenreich und wird durch verschiedene Faktoren wie beispielsweise den Grad der Motorisierung, die demographische Struktur der Bevölkerung, die Entfernungen zwischen spezialisierten Stadtbezirken und die* Topographie des Standorts beeinflusst.

Andere wichtige Aspekte sind:

1. Entwicklung im Hinblick auf die Erhaltung des öffentlichen Verkehrs.
2. Sicherstellung fairer Konkurrenz zwischen Staat und privaten Fahrern.
3. Ständige Verbesserung des öffentlichen Verkehrsnetzes, um die Nutzung der öffentlichen Verkehrsmittel auf ihrem gegenwärtigen Stand zu halten.

Litauen muß seine Hauptprioritäten ändern und die städtische Umgebung sorgfältiger evaluieren. Die Marktwirtschaft erlaubt es den Einwohnern, sich für ihre täglichen Wege das beste Verkehrsmittel auszusuchen, doch schafft die beschränkte Kapazität des städtischen Straßennetzes viele Probleme: Zeitmangel, Verzögerungen zu Spitzenzeiten, Lärmbelastung, Luftverschmutzung, Verkehrsunfälle.

SLOVENSKO STRATEGIJE URBANEGA TRANSPORTA NA POTI HUMANIZACIJE LITVE

Na poti humanizacije je potrebno v urbanem trnasportu spremeniti glavne prioritete v naslednje zaporedje:

1. pešačenje, 2. kolesarjenje, 3. javni prevoz, 4. servisni prevoz, 5. osebni avtomobili.

Oddelek za urbanizem je izvedel javnomnenjsko raziskavo v obliki ankete, ki naj bi pokazala, kakšen del prebivalstva uporablja kolesa, kateri so glavni nameni voženj in kakšne so ovire za uporabo kolesa. Podatki iz vprašalnika so pomagali vzpostaviti zvezo med velikostjo mesta in uporabo koles v njem. Pokazali so, da je ta obratnosorazmerna. Zveza je zapletena in večkratna, nanjo pa vplivajo faktorji kot je raven motorizacije, demografska struktura, razdalja med specializiranimi predeli mest in njihov lokalni relief.

Drugi pomembni vidiki:

1. razvoj javnega prevoza je nujen, da se ta ohrani
2. zagotavljanje enakih možnosti za državne in privatne prevoznike
3. stalno izboljševanje urbanega omrežja poti javnega prevoza da bi ohranili raven prevoznih uslug

Litva mora spremeniti glavne prioritete in bolje poskrbeti za urbano okolje. Tržna ekonomija omogoča prebivalstvu izbiro načina dnevnega prevoza. Toda omejitve kapacitete mestnega cestnega omrežja povzroča mnogo problemov: izgubo časa, zastoje v konicah, hrup in onesnaževanje, prometne nesreče.

CYCLING IN THESSALONIKI

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CYCLING IN THESSALONIKI

Cycling is a popular way of travel in many European countries. Unfortunately, in Greece problems such as inadequacy of road infrastructure, illegal parking and poor police enforcement, are some of the problems that do not permit cycling to develop. On the other hand, a lot of people seems to be ready to use the bicycle - under conditions - as primary mode for their trips.

In this framework, a behavioural survey has been planned for the city of Thessaloniki to estimate the number of people who are willing to use the cycle for their everyday trips and the conditions under which this is possible. This survey will reveal whether people are interested in cycling or not and will show what are the main reasons for not doing so, until now.

RADFAHREN IN THESSALONIKI

Das Radfahren ist in vielen europäischen Ländern eine beliebte Fortbewegungsart. Unglücklicherweise stehen in Griechenland Probleme wie die Unzulänglichkeit der Verkehrsinfrastruktur, Falschparker und eine eher nachlässige Einstellung der Polizei einer Entwicklung des Fahrradverkehrs im Wege. Andererseits scheinen viele Menschen bereit zu sein, das Fahrrad als Hauptverkehrsmittel zu verwenden, sofern gewisse Bedingungen erfüllt werden.

In dieser Situation wurde für die Stadt Thessaloniki eine Verhaltenserhebung geplant, um abschätzen zu können, wie viele Menschen bereit wären, das Fahrrad als tägliches Fortbewegungsmittel zu verwenden, und um festzustellen, unter welchen Bedingungen dies möglich wäre. Die Erhebung wird zeigen, ob die Menschen am Radfahren interessiert sind oder nicht, und sie wird Auskunft darüber geben, welche Gründe sie bisher noch davon abgehalten haben.

KOLESARJENJE V MESTU THESSALONIKI (SOLUN)

Kolesarjenje je popularni način potovanja v mnogih evropskih državah. Na žalost je v Grčiji kar nekaj problemov, ki ne dovoljujejo razvoja kolesarjenja; to so neprimerna cestna infrastruktura, nezakonito parkiranje in slabo uveljavljena policija. Po drugi strani pa je veliko ljudi pripravljenih uporabljati kolo, pod pogoji, kot primarno sredstvo svojih potovanj.

V tem okviru je bila za mesto Thessaloniki (Solun) načrtovana raziskava obnašanj, da bi ocenili število ljudi, ki so pripravljeni uporabljati kolo pri svojih vsakodnevnih potovanjih ter pogoje, pod katerimi je to možno. Dana raziskava bo razkrila, če ljudi kolesarjenje resnično zanima ali ne in kje so, do sedaj, za to glavni vzroki.

NEW PROVISIONS FOR CYCLISTS IN YUGOSLAV CITIES

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ENGLISH

NEW PROVISIONS FOR CYCLISTS IN YUGOSLAV CITIES

Some recent traffic counts and surveys in Yugoslav cities have shown significant increase of bicycle usage comparing the figures from the late eighties. Share of bicycles reaches up to 8 -10% in some cities.

Two new bicycle schemes are presented: Belgrade and Novi Sad. The schemes are based on the similar assumptions and objectives:

- connecting recreational areas,
- improving accessibility to schools and amusement centers,
- connecting some industrial areas,
- improving geometry of intersections,
- implementation of safety measures.

Yugo Cycling Campaign - cyclist's organization, is formed in order to advocate for new cycle facilities. Some private and public firms, through some "concessions" along the bicycle paths (such are advertising space and small areas for kiosks), finance the new bicycle infrastructure. These new forms of bicycle usage enforcement are discussed as well.

WEDNESDAY

DEUTSCH

NEUE ANLAGEN FÜR RADFAHRER IN JUGOSLAWISCHEN STÄDTEN

Einige in jüngster Zeit durchgeführte Verkehrszählungen und Erhebungen in jugoslawischen Städten haben einen signifikanten Anstieg des Fahrradverkehrs im Vergleich zu den Zahlen aus den späten 80er Jahren gezeigt. Der Anteil des Fahrradverkehrs erreicht in manchen Städten 8 - 10%.

Zwei neue Fahrradstrategien werden präsentiert: Belgrad und Novi Sad. Die Programme basieren auf gleichartigen Annahmen und Zielsetzungen:

- Verbindung zu Erholungsgebieten
- Verbesserte Erreichbarkeit von Schulen und Freizeiteinrichtungen
- Verbindung zu einigen Industriegebieten
- Verbesserung der Kreuzungsgeometrie
- Implementierung von Sicherheitsmaßnahmen

Der jugoslawische Radfahrerverband wurde gegründet, um sich um neue Radverkehrsanlagen zu bemühen. Einige private und öffentliche Unternehmen finanzieren im Gegenzug für einige „Zugeständnisse“ entlang der Radwege (z.B. Werbeflächen und kleine Flächen für Kioske) die neue Fahrradinfrastruktur. Diese neuen Arten der Förderung des Fahrradverkehrs werden ebenfalls diskutiert.

SLOVENSKO

NOVI UKREPI ZA KOLESARJE V JUGOSLOVANSKIH MESTIH

Zadnji prometni rezultati in raziskave jugoslovanskih mest kažejo na pomembno povečanje uporabe kolesa, če to uporabo primerjamo s številkami poznih 80.-ih let. V nekaterih mestih se delež kolesarjev povzpne na 8 do 10%.

Predstavljena sta dva nova kolesarska projekta : Beograd in Novi Sad. Projekta bazirata na podobnih domnevah in ciljih :

- povezava rekreacijskih območij,
- izboljšanje dostopnosti do šol in zabaviščnih centrov,
- povezava nekaterih industrijskih območij,
- izboljšanje geometričnosti križišč,

- izvedba varnostnih ukrepov.

Jugo - kolesarska kampanja je kolesarska organizacija, ki je bila ustanovljena zaradi zavzemanja za novo kolesarsko infrastrukturo. Nekatere privatne in državne firme financirajo novo kolesarsko infrastrukturo skozi "koncesije" vzdolž kolesarskih poti (kot so oglaševalna mesta in manjša območja za kioske). To uveljavljanje uporabe novih kolesarskih oblik

NEW PROVISIONS FOR CYCLISTS IN YUGOSLAV CITIES

INTRODUCTION

In the last 5-6 years, awareness of the necessity for saving petrol in transport in Yugoslavia has risen considerably. The sudden shortage of petrol as well as the political and economic situation seem to be the main reasons for the "rehabilitation" of forgotten modes of transport. Considering the situation, some old ideas for bicycle network development have been reactivated. Also, through new approaches to city planning which have been undertaken recently, considerably higher attention has been paid to the treatment of pedestrians and cyclists.

Figures showing increasing share of bicycles in traffic flow and modal split in some cities are presented here. One of the reasons for increasing our concern was the cyclist's safety as a serious problem in some cities. The lack of investments in capital transport infrastructure projects and changes in urban development policies open the "space" for cyclists and their needs. These are the main reasons for reconsideration of cyclists infrastructure.

The paper shows the new bicycle infrastructure developments in the two largest cities in Yugoslavia, Belgrade and Novi Sad. Since both cities lay on the Danube river banks, a small part of Euro Velo Routes which are being developing (namely number 11) have already been completed.

BICYCLE IN THE GENERAL TRANSPORT PLANNING CONTEXT

Planning for bicycles in Yugoslavia has not been seriously considered in urban and transport planning theory and practice until recently. The first generation of Master plans, in the early fifties, still had some "remains of the past". Some modest attempts concerning cycle paths were implemented in plans of Belgrade, Novi Sad and some smaller cities at that time. The next generation of plans definitely abandoned the cycle infrastructure. Since that was the period of the great urbanization in Yugoslavia (in the late sixties and seventies), followed by significant increase of motorization level, the majority of cities formed its main road network and urban pattern without any bicycle infrastructure. Partially due to social changes and lower income rates among the blue collars, the working class remains the last bicycle category user in the majority of cities.

But the recent turbulent years as well as the transition process which Yugoslavia is passing through, caused the closure of many factories and industrial plants - hundreds of bicycle racks remained empty. There were almost no more bicycles on our streets. A good example for that is the city of Nis. As the one of the biggest industrial cities in Serbia with the factories concentrated along the main arterial roads, Nis had one of the first cycle tracks several kilometers long which is now rarely used.

The young generation of people, aware of environmental issues and healthy life, not rich but with fresh ideas, accepted bicycles and started to use them. But they are faced with several problems:

- lack of appropriate infrastructure,
- inconvenience in storing bicycles at homes (and on other trip ends as well),
- dangerous riding due to arrogance of the new generation of drivers,
- lack of any institutional form or organization representing their needs,
- considerably higher level of bicycles theft.

These are the reasons why bicycles are not used more. Although some recent figures show a very high level of bicycle ownership (Novi Sad, 1.0 bicycles/households, Belgrade, 0.3 - 0.6, Pancevo, 0.9, Nis, 0.6) the share of cycles is not satisfactory.

A research (Gvozdic, 1981) showed that the majority of Yugoslav cities have acceptable conditions for cycling from the aspect of natural factors (climate, terrain, etc.). This was an important investigation showing that cycling is a promising alternative.

The new generation of planners (and plans) has accepted influence from the developed countries and started the implementation of bicycle infrastructure in new plans. There are a lot of recent examples in several Yugoslav cities where the "new deal" has started: Nis, Subotica, Novi Sad, Belgrade, Pancevo, etc. Two of them are presented in more detail.

BELGRADE

The biggest city in Yugoslavia, Belgrade, with a population of 2 million, has enormous transport problems, particularly insufficient street capacities and an inadequate mass transit system.

The percentage of cyclists on Belgrade's streets is still low. Perhaps, one of the reasons is a rather high level of injuries of cyclists (about 130 serious injuries/year, with 20 - 30% increase per year). This trend must be considered very seriously in the future transport policy decisions.

After modest attempts in the last decades to introduce bicycles into the street network, the first serious plan was completed in 1994. The conditions for bicycles have been investigated and the plan for a network has been proposed. A total length of 85 km of double side paths (on the North Western part - New Belgrade) and about 70 km on the other side of the river Sava have been planned.

Until now more than 15 km of separate paths have been completed. The main paths connect the city center with the biggest recreational area Ada Ciganlija (lake and peninsula), which attracts more than 300.000 visitors daily in the summer. As the greatest recreational attraction, Ada deserves good, safe connections for bicycles from all parts of the city. According to surveys undertaken this was the one of the main requests among thousands of visitors. More than 25% of all visitors requested new bicycle paths.

Certain parts of the paths were built by private funding in such a way that investors were given the right to build certain objects along the paths in order to facilitate cycling. According to this principle several bike services, "commercial bike parking" and "bike - cafes" are being built. Free advertising along the paths stimulated private investors to build safety fenders along the paths, racks and other useful facilities. This system of funding seems to be the real possibility for expanding the bicycle network, at least for the time being.



Figure 1. Bicycle network in Belgrade

NOVI SAD

Novi Sad is the biggest city in the Province of Vojvodina, the Northern part of the Republic of Serbia. As a remain of the old Pannonian Sea, Vojvodina lays on a flat terrain. All the cities of Vojvodina have very wide street fronts (due to the availability of space), which is one of the main reasons for traditionally higher usage of bicycles. Although the cycles were present in large numbers in Novi Sad in the fifties and the sixties, the automobile era in the seventies caused a shift towards higher usage of cars and public transport. Novi Sad has 270.000 inhabitants and a motorization level of 260 cars/1000 inhabitants. The number of cycles in 1990. was 70.000 (one per household).

The figures from earlier analyses (Radovanac, 1984) show that the percentage of cyclists in Novi Sad was between 7 and 9% (even up to 18%) on some streets in the seventies. They were sharing the same space with other motorists. But, although the bicycle usage in Novi Sad is higher than decades ago, the recent traffic counts do not show that because of the methodological problem which occurred in the systematic traffic counts in recent years. New paths were constructed on the separate space but the traffic counts were made only on the streets. Thus systematic counts on separate paths were not done! Nevertheless, the share of cyclists on roads are still several percents of the flow composition - many cyclists are not using the existing paths! The whole number of cyclists in trip distribution by modes reaches up to 6 %. Having in view the observed daily mobility rate, (2.8 trips/person) the total figure of daily bicycle trips accounts to 45.000.

The first experimental path, long only 150 meters, was built in 1966. After that paths were scarcely constructed within street profiles, until recently when the New Plan was introduced.

The New Plan proposes a total length of 54 km. Apart from that, 21 km of bicycle paths have already been completed (which covers about 23% of all streets). When the network is finished it will be the largest cycle network in Yugoslavia, comparing to the city size.



Figure 2. Bicycle network in Novi Sad

CONCLUSIONS

Although very modestly, bicycles are attracting greater attention in transport planning in many Yugoslav cities in recent years. Reasons for this lay in increased awareness of their significance for economy, safety and ecology. In many cities, for the first time, bicycle infrastructure has been implemented in the transport and land use plans.

Members of the Yugo Cycling Campaign, an advocacy group established last year, hope that all efforts, public pressure, international exchange and influence will help in even better and faster improvement of bicycling in Yugoslavia. Cyclists only need the same rights as car drivers.

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THE NETWORK OF THE FIN-NISH CYCLING MUNICIPALITIES -A WAY OF IMPROVING THE INFRASTRUCTURE AND STATUS OF CYCLING

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ENGLISH

THE NETWORK OF THE FIN-NISH CYCLING MUNICIPALITIES -A WAY OF IMPROVING THE INFRASTRUCTURE AND STATUS OF CYCLING

Cycling is an efficient, environmentally friendly and noiseless means of transportation. By encouraging people to cycle we can solve many problems in modern cities.

The Network of The Fin-nish Cycling Municipalities was established in 1997 to improve infrastructure for cycling in Finland, to bring up walking and cycling in the national traffic policy and maintain connections in between different organizations and people.

The experiences within the network show that it is very important to have a full time person working with promotion of cycling. The future objective's of the network are to continue the work of improving the infrastructure and status of cycling in Finland, to improve the traffic safety of cyclists and to promote the idea of cycle tourism.

WEDNESDAY

DEUTSCH

DAS NETZ DER FINNISCHEN FAHRRADGEMEINDEN

Radfahren ist eine effiziente, umweltfreundliche und geräuscharme Fortbewegungsart. Indem wir die Menschen zum Gebrauch des Fahrrads ermutigen, können wir viele Probleme in modernen Städten lösen.

Das Netz der finnischen Fahrradgemeinden wurde 1997 ins Leben gerufen, um die Fahrradinfrastruktur in Finnland zu verbessern, um dem Fußgänger- und dem Fahrradverkehr einen Platz in der nationalen Verkehrspolitik zu sichern und um Kontakte zwischen verschiedenen Organisationen und Menschen aufrechtzuerhalten.

Die Erfahrungen innerhalb des Netzes zeigen, daß es sehr wichtig ist, einen ganztags angestellten Mitarbeiter zu haben, der sich der Förderung des Radfahrens widmet. Die Zielsetzungen des Netzes für die Zukunft bestehen in einer Fortführung der Anstrengungen zur Verbesserung der Fahrradinfrastruktur und des Status, den das Radfahren in Finnland genießt, einer Verbesserung der Verkehrssicherheit für Radfahrer und einer Förderung des Fahrradtourismus.

SLOVENSKO

OMREŽJE FINSKIH KOLESARSKIH MESTNIH OBČIN (POT K IZBOLJŠANJU INFRASTRUKTURE IN STATUSA KOLESARIJENJA)

Kolesarjenje je učinkovito, okolju prijazno in nehrupno sredstvo prometa. Z vzpodbujanjem ljudi h kolesarjenju, lahko rešimo mnoge probleme modernih mest.

Omrežje Finske kolesarske mestne občine je bilo ustanovljeno leta 1997, da bi se izboljšala kolesarska infrastruktura Finske, da bi oživel pešačenje in kolesarjenje v nacionalni prometni politiki ter ohranili zveze med različnimi organizacijami in ljudmi.

Izkušnje v okviru omrežja kažejo, da je pomembno imeti nekoga, s polnim delovnim časom, ki se ukvarja s promocijo kolesarjenja. V prihodnosti so cilji obstoječe mreže nadaljevati z delom izboljšanja infrastrukture in statusa kolesarjenja na Finskem, izboljšanje prometne varnosti kolesarjev in promocija ideje kolesarskega turizma.

CITY CYCLE NETWORKS - WHERE NEXT

THE NETWORK OF THE FINNISH CYCLING MUNICIPALITIES

- a way of improving the infrastructure and status of Cycling

Cycling is an efficient, sustainable, pollution-free and noiseless means of transportation. By encouraging people to cycle we can solve many problems associated with traffic in modern cities.

Cycling is gaining more and more acceptance in Finland as an equal means of transportation compared to motorized traffic. As over half of all the trips made in Finland are shorter than 6 kilometers and when most of the people in Finland are living in the cities, there is a huge potentiality for cycling in Finland. There is no accurate numbers of the amount of bicycle trips made in Finland, but some recent surveys in the biggest cities show that the percentage of cycle trips compared to all trips is somewhere between 25 % to 5 % (table 1.).

Table 1. Percentage of bicycle trips in some cities in Finland.

City	inhabitants	percent of trips by bike in the summertime (month & year of the survey)	In the city of Turku (167 000
Helsinki capital-area	906 000	17 % (6,8 /1997)	
Oulu	112 000	25 % (5/1994)	
Tampere	186 000	16 % (8/1997)	
Hämeenlinna	45 000	6 % (1995)	

inhabitants) on the western coast of Finland, as many as 40 % of the persons interviewed said that they cycle at least twice a week to work during summer. During the year 1998 there is conducted a survey which will for the first time show reliable numbers of the amount of cycle and pedestrian trips in Finland. The results of the survey will be published in the end of year 1999.

There has been lot of effort put into improving the infrastructure for cycling in Finland during the 1990's. In Finland it is recommended in the planning instructions to separate cycling from both motorized traffic and walking. When this is not always possible, it is very common to have cycle roads that function also as pedestrian roads. As this is not a good practice in the centers of the cities, the emphasis in the future is to build totally separated cycle roads.

The Network of the Finnish Cycling Municipalities was established in January 1997 to promote cycling and to improve infrastructure for cycling in Finnish cities and municipalities. The objectives of the Network are to establish cycling as a practical means of travel in urban and rural areas, to encourage Finnish municipalities to improve infrastructure for cycling and to encourage and advance communication between different authorities, companies, citizens and NGOs. Special emphasis is put to the national traffic policy, where cycling has too often been forgotten.

An important objective of the Network is to encourage the co-operation between the municipal officials in the municipalities on sectors such as environmental protection, land use planning and traffic planning, physical education and health. The status of cycling in Finland is not very high, and a important role of the Network is to improve that status. Eight NGO's, Traffic League as one of them, has nominated the year 1999 as A Year of Walking, and thus also the Network is widening it's horizon to include walking to be a central element of it's work.

The founding of the Network followed the example of Cities for Cyclists, an European network for promotion of cycling. An important factor in starting up the Network was the work done by different organizations for promoting cycling in the 1980's and 1990's in Finland, particularly the formation of the National Cycle Policy in 1993 by the Ministry of Traffic and Telecommunications. The year 1996 was nominated as the National Cycling Year and as a result The Network of the Finnish Cycling Municipalities was founded in the beginning of 1997.

In November 1999 there were 20 members in the Network, including almost all of the largest cities in Finland and also some small municipalities. The Finnish Road Administration joined the network in March 1998. The Network is co-ordinated by the Traffic League, the other founding organizations included are the Ministry for Traffic and Telecommunications, the Ministry for Environment, the Finnish League of Municipalities and the Finnish Sport for All Association. In Table 2. is presented some data on the cycle roads of the member Municipalities.

Table 2. Roads and Cycle roads in the Member Municipalities.

The member municipalities of the Network are very different from each other. The rural municipality of Nauvo has only about 1500 inhabitants and the Capital of Finland, Helsinki, has 530 000 inhabitants. The amount of cycle and walking

Municipality	Roads maintained by Road Administration (km)	Cycle roads maintained by Road Administration (km)	Roads maintained by municipality (km)	Cycle and walking roads maintained by municipality (km)
Helsinki	?	?	1130	900
Joensuu	50	17	247	226
Jyväskylä	57	16	311	212
Järvenpää	94	4	180	81
Kangasala	400	30	118	30
Kauhajoki	351	22	120	36
Kerava	23	3	121	60
Lahti	91	20	425	332
Nauvo	150	2	3	3
Oulu	152	?	897	329
Paltamo	?	?	140	3
Pirkkala	24,5	8,5	50	8
Pori	199	33	498	200
Rauma	112	17	195	70
Rääkkylä	196	5	7	1
Tampere	254	25	610	280
Toijala	23,5	6	73	13
Turku	121	47	579	271
Vaala	300	3	190	3
Road Administration (whole Finland)	78 536	3897	-	-

roads in the big cities is naturally much higher than in small rural municipalities. There is no separate statistics of which would tell the amount of cycle roads only and therefore the numbers given include both walking and cycling roads.

The main tasks of The Network of the Finnish Cycling Municipalities are:

- publishing of a monthly newsbulletin: Pyöräilyuutiset ("Cycling News"),
- following up of the current development and research associated with cycling and walking,
- maintaining a database of recent development of research and studies associated with cycling and walking,
- arranging of seminars, courses and meetings within the Network,
- maintaining the contacts in Finland, in Europe and all over the world,
- distributing of new ideas and practises associated with cycling and walking,
- advising on subjects of how to promote cycling and walking and also how to improve the infrastructure of cycling and walking in the member municipalities,
- creating ideas for research and also conducting studies and research (based on exterior funding).

Pyöräilyuutiset, the Monthly newsbulletin of the Network, is the most important tool and media

GUIDANCE SYSTEMS FOR URBAN CYCLE NETWORKS

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GUIDANCE SYSTEMS FOR URBAN CYCLE NETWORKS

This paper explains the need for and the potential functions of a separate guidance system for cycle traffic in urban areas. After an analysis of potential user groups, local cyclists are defined as the target group to be taken into account when designing the system. The paper concentrates on an analysis of individual problems such as route selection, definition of destinations, appropriate design of signs and practical implementation of the respective concepts. The theoretical principles underlying the planning process will be described but briefly, more attention being given to practical experience and lessons learnt in the course of the planning and implementation of guidance systems for cycle networks. The authors, who designed guidance systems for urban cycle networks in Salzburg, Linz and Perchtoldsdorf near Vienna and accompanied these projects from the very beginning to the implementation stage, will formulate practical recommendations for each of the problem areas indicated.

WEGWEISUNGSSYSTEME IM STÄDTISCHEN RADVERKEHR

GUIDANCE SYSTEM OF A CITY CYCLE NETWORK

Der Beitrag begründet einführend die Notwendigkeit eines eigenen Weg-weisungssystems für den Radverkehr im urbanen Bereich und erläutert die Funktionen, die ein derartiges Leitsystem erfüllen kann. Nach der Analyse der potentiellen Benutzergruppen werden ortsansässige Radfahrer als klare Zielgruppe für die Auslegung des Systems definiert. Schwerpunkt des Beitrags ist eine Analyse der einzelnen Problemfelder Routenwahl, Zielfestlegung, Gestaltung der Wegweiser und Umsetzung der konzeptionellen Planung in die Ausführungsphase. Dabei wird weniger auf eine Beschreibung von theoretischen Planungsgrundlagen eingegangen, als praktische Erfahrungen und Lehren bei Konzeption und Umsetzung von Radwegweisungs-systemen weitergegeben. Für jeden Problembereich werden praxisgerechte Empfehlungen formuliert. Die Autoren haben in Salzburg, Linz und Perchtoldsdorf bei Wien derartige Leitsysteme für den urbanen Radverkehr geplant und bis zur Ausführung begleitet.

SISTEMI ZA VODENJE V MESTNEM OMREŽJU KOLESARSKIH POTI

Prispevek uvodoma utemeljuje potrebnost posebnega sistema za vodenje za kolesarski promet v urbanem področju ter osvetljuje funkcije, ki naj bi jih takšen sistem omogočal. Po analizi potencialnih uporabniških skupin se pokaže, da predstavljajo ciljno skupino za določitev sistema lokalni kolesarji. Tezišče prispevka predstavlja analiza posameznih problemskih področij: izbira poti, določitev cilja, oblikovanje smernih tabel in prenos konceptualnega načrta v izvajanje. Pri tem je bolj kot na teoretičnih opisih planskih osnov povdarek na praktičnih izkušnjah pri zasnovi in izvedbi sistema za vodenje kolesarjev. Za vsako problemsko področje so predstavljena praktična priporočila. Avtorja sta sisteme za vodenje kolesarjev v urbanih področjih načrtovala in spremljala izvedbo v Salzburgu, Linzu in Perchtoldsdorfu pri Dunaju.

WEGWEISUNGSSYSTEME IM STÄDTISCHEN RADVERKEHR

A WARUM EINE EIGENE WEGWEISUNG FÜR DEN RADVERKEHR?

A.1 Eignung bestehender Leitsysteme

Leitsysteme für den motorisierten Verkehr bestehen heute in vielen Städten. Grundsätzlich sind die darauf enthaltenen Informationen auch für andere Verkehrsteilnehmer, also auch für Radfahrer zugänglich. Häufig wird der Sinn einer eigenen Wegweisung für den Radverkehr daher in Zweifel gezogen. Dabei wird allerdings vergessen, daß Leitsysteme für den Kfz-Verkehr fast ausschließlich an stark befahrenen Routen stehen und außerdem Zielangaben enthalten, die für den motorisierten Verkehr gedacht sind.

Die Routenwahl der Radfahrer ist dadurch gekennzeichnet, daß stark kfz-belastete Straßen möglichst gemieden werden, da dort ein extrem hohes Risikopotential für den Radfahrer besteht. Radfahrer passieren daher eher selten die Standorte von Wegweisern für den motorisierten Verkehr.

Gegenüber dem Automobil weist das mit physischer Kraft bewegte Verkehrsmittel Fahrrad einen geringeren Aktionsradius auf. Etwa 90 bis 95% aller Radfahrten im städtischen Bereich weisen eine Reiseweite von unter 5 km auf [1], so daß viele Ziele, die auf Wegweisern für den motorisierten Verkehr ausgewiesen sind, für den Radverkehr schon aufgrund der Entfernung nicht mehr interessant sind. Andere Ziele sind von ihrer Art her völlig irrelevant für Radfahrer (z. B. Autobahnauffahrten oder Parkhäuser).

Die bestehende Wegweisung ist für den Radverkehr nicht geeignet und zwar weder von den ausgewiesenen Zielen noch von den Standorten der Wegweisung her.

A.2 Begründung für eine eigene Wegweisung für den Radverkehr

Natürlich werden passionierte ortsansässige Radfahrer in der Lage sein, ihre Ziele auch ohne Wegweisung auf großteils radfahrgerechten Routen zu erreichen.

Es muß aber davon ausgegangen werden, daß ein Teil der ansässigen Wohnbevölkerung durch die Unkenntnis radfahrgerechter Routen (besonders in entferntere Siedlungsbereiche) von einer Benutzung des Rades abgehalten wird. Diese potentiellen „Gelegenheitsradfahrer“ kennen die Zusammenhänge des Siedlungsraums zwar im Großen, aber eben aus der Sicht des Autofahrers oder des Benutzers öffentlicher Verkehrsmittel. Für diese stellt eine Wegweisung, die sie in die unmittelbare Umgebung ihrer Ziele auf sicheren, radfahrgerechten Routen führt, eine vielleicht entscheidende Anregung zur Benutzung des Verkehrsmittels Fahrrad dar.

Es kann davon ausgegangen werden, daß Personen, die das Fahrrad nicht oder wenig benutzen - sogenannte Gelegenheitsradfahrer, durch ausgewiesene radfahrgerechte Routen und Zielhinweise zum vermehrten Radfahren angeregt werden. Von einem gut konzipierten Wegweisungssystem darf zweifellos eine Förderung für den Radverkehr erwartet werden.

A.3 Funktionen eines Wegweisungssystems für den Radverkehr

Ein Wegweisungssystem für den Radverkehr kann eine ganze Reihe von Funktionen erfüllen. Die nach Meinung der Autoren bedeutendsten sind nachfolgend beschrieben.

- In erster Linie hat ein Wegweisungssystem Orientierungshilfe und Information zu geben. Da der Radverkehr umweg- und steigungsempfindlich ist, sollen durch das Leitsystem ärgerliche Umwege sowie größere Steigungen möglichst vermieden werden.
- Nicht unwesentlich kann die Verkehrssicherheit beeinflußt werden, besonders wenn im Rahmen der Ausführung des Leitsystems die Führung an Problemstellen neu gestaltet und möglicherweise begleitende bauliche Maßnahmen gesetzt werden. Durch eine gewisse Bündelung des Radverkehrs auf sicheren Routen sowie die Vermeidung von Konfliktpunkten im ausgewiesenen Routennetz - auch mit dem Fußgängerverkehr, können positive Effekte für die Verkehrssicherheit entstehen.
- Als nicht unbedeutende indirekte Wirkung eines Leitsystems ist in jedem Falle eine Verbesserung des sogenannten „Fahrradklimas“ zu erwarten (als Fahrradklima werden die allgemeine Einstellung der Bevölkerung zum Radverkehr und die soziale Stellung des Verkehrsmittels Fahrrad bezeichnet). Die Anbringung von ansprechend gestalteten einheitlichen Wegweisern, die als eindeutig für den Radverkehr gewidmet erkennbar sind, stellt das Fahrrad unmißverständlich als zum Automobil gleichberechtigtes Verkehrsmittel dar.

B WEM SOLL DIE RADWEGWEISUNG DIENEN?

Verschiedene Gruppen von Radverkehrsteilnehmern nutzen das Fahrrad zu unterschiedlichen Zwecken. Während ein Großteil der ortsansässigen Alltags- sowie Freizeitradfahrer das Fahrrad als Verkehrsmittel zu Erreichung eines Ziels verwenden, gebrauchen beispielsweise Sportler (prinzipiell auch zu den Freizeitradfahrern zu rechnen) das Fahrrad als Sportgerät. Für Fahrradtouristen stellt das Rad einesteils Verkehrsmittel dar, ist aber auch das zentrale Gerät zur Urlaubs- und Freizeitgestaltung.

Naturgemäß gehen die Bedürfnisse der verschiedenen Benutzergruppen des Fahrrads nicht in allen Bereichen parallel, im Gegenteil, häufig stehen sie einander diametral entgegen.

- Für den typischen ortsansässigen Alltagsradfahrer stellt das Fahrrad reines „Verkehrs“-Mittel zum Zweck dar (ohne darauf näher eingehen zu wollen, daß die Wahl des Verkehrsmittels Fahrrad auch aufgrund von Spaß am Radfahren erfolgen kann, was für einen nicht unbeträchtlichen Teil der Alltagsradfahrer auch gilt [5]). Ihre Routenwahl ist gekennzeichnet von einer ökonomisch orientierten Zielerreichung. Längere Umwege werden unter Inkaufnahme einer schlechteren Routenqualität vermieden. Auf diesen Routen wollen Alltagsradfahrer (besonders solche, die sich im Stadium des Gelegenheitsradfahrers befinden) von der Quelle, beispielsweise der eigenen Wohnung, zum Ziel, beispielsweise in einen anderen Stadtteil, wo sich der Arbeitsplatz befindet, geführt werden.
- Der ortsansässige Freizeitradfahrer, der zwar ebenfalls zielorientiert ist (beispielsweise mit dem Rad zum Freibad fährt), ist hingegen sensibler gegenüber Qualitätsminderungen der Route. Es werden tendenziell längere Umwege in Kauf genommen, um auf hochwertigen Radverkehrs-verbindungen unterwegs sein zu können. Die mittleren Reiseweiten sind etwas höher als beim Alltagsradfahrer. Prinzipiell decken sich die Bedürfnisse des zielgebundenen Alltags- und Freizeitradfahrers, auch dieser will auf einer Route zum Ziel geführt werden. Einziger, jedoch gravierender Knackpunkt ist: Die Anforderungen an die Qualität der Route und damit an die Routenführung sind unterschiedlich.
- Streckenorientierte Freizeitradfahrer sehen das Fahrrad im Mittelpunkt ihrer Aktivitäten. Zu dieser Gruppe gehören Sportler, aber auch Personen, die statt spazieren zu gehen, eine Runde mit dem Fahrrad drehen. Der eigentlichen Intention dieser Gruppe, nämlich die Führung auf zweck-ent-sprechenden Routen, wird im Rahmen eines urbanen Leitsystems kaum zu entsprechen sein, wenn man von der Erreichung von Ausgangspunkten absieht.
- Radtouristen sind jene Gruppe, für die häufig Leitsysteme errichtet werden. Allerdings werden dabei zumeist Überlandrouten (Radwanderwege wie der Drauradweg, Donauradweg, Tauern-radweg usw.) beschildert. Die Bedürfnisse von Radtouristen unterscheiden sich fundamental von denen der anderen Gruppen. Sie wollen auf „ihrer“ Radrouten geleitet werden, lediglich im Bereich von Attraktionen sind Hinweise anzubringen. Das weitere Informationsbedürfnis beschränkt sich auf Herbergen, Raststätten, eventuell Haltestellen des öffentlichen Verkehrs und Informationsstellen für Touristen.

Aufgrund der zahlenmäßig klar dominierenden zielorientierten ortsansässigen Radfahrer (Alltags- sowie Freizeitradfahrer) halten es die Autoren für sinnvoll, ein Leitsystem schwerpunktmäßig auf deren Bedürfnisse abzustellen.

Nicht vergessen soll immerhin werden, daß ein guter Teil dieser Gruppen auf das Rad als Verkehrsmittel angewiesen ist (Frauen in Familien ohne Zweitauto, Jugendliche) und sich die Verkehrsplanung in einer demokratischen Gesellschaft auch einmal um diese „schwächeren“ (zumindest im Sinne der Antriebsleistung) Verkehrsteilnehmer anzunehmen hat.

C PROBLEMFELDER BEI DER PRAKTISCHEN UMSETZUNG

C.1 Problemfeld 1: Routenwahl

Aus der Sicht theoretischer Planung ergibt sich die Problematik, daß in einem auszuweisenden Routensystem nicht gleichermaßen sowohl für Alltags- als auch Freizeitradfahrer ideale Verhältnisse geschaffen werden können. Eine Lösung durch Ausweisung verschiedener Routen für Alltags- und Freizeitverkehr erscheint für urbane Radweg-weisungssysteme kaum praktikabel, da durch die notgedrungen unterschiedliche Gestaltung der Wegweiser eine heillose Verwirrung bei ungeübten Benutzern entstehen müßte. Noch dazu würden sich Routen für Alltags- und Freizeitradfahrer häufig überschneiden, was eine doppelte Beschilderung notwendig machen würde.

Die günstigste Lösung ist nach Meinung der Autoren die Integration von Alltags- und Freizeitrouten in ein einheitlich gestaltetes Wegweisungssystem. Dadurch wird der Grundsatz der Einfachheit für den Benutzer, der in beinahe allen verkehrsplanerischen Aufgabenstellungen eine Notwendigkeit zum Erfolg darstellt, am besten entsprochen.

Tatsächlich treten nämlich Wahlkonflikte über unterschiedliche Routenfestlegungen nur in wenigen Aus-nahmefällen auf. Ein weiterer wichtiger Punkt bei der Gestaltung des Leitsystems ist das Abgehen von linear aufgebauten Routensystemen.

Diese Vorstellung kommt aus der Planung für Radtouristen (eine Route durchgehend beschildert) und mißachtet die Bedürfnisse des in der Fläche wirkenden Verkehrsmittels Fahrrad.

Die Autoren empfehlen daher unbedingt die Ausweisung eines vernetzten Routensystems, in dem der Radfahrer an den Knotenpunkten zielorientiert entscheiden kann.

Eine in der Planungspraxis auftretende Schwierigkeit ist die Gewährleistung der durchgehenden Qualität der ausgewiesenen Routen. Die städtische Verkehrsplanung löst Probleme eher punktuell nach den Gesichtspunkten „politische Durchsetzbarkeit“ und „Schwere der bestehenden Behinderung bzw. Gefahr“. Bei der Verbindung zweier Ziele ergeben sich daher häufig Bereiche, in denen diese Gefahrensituationen noch nicht beseitigt sind. Da in bezug auf die Qualität der ausgewiesenen Routen die Bandbreite für Kompromisse schmal ist, ergeben sich bei der Routenplanung häufig Forderungen nach Lösungen einzelner Problemzonen.

Eine Ausweisung von qualitativ minderen Routenbereichen im Wegweisungssystem würde die Akzeptanz des Gesamtsystems in jedem Falle herabsetzen.

Eine Aussparung solcher Routen aus dem Gesamtsystem ist bei Undurchführbarkeit von befriedigenden Lösungen noch die günstigere Alternative - immerhin sollte sich der Verkehrsplaner seiner Verantwortung bewußt sein. Die Aufnahme von Gefahrenbereichen in das Leitsystem stellt eine wissentliche Gefährdung der Benutzer dar.

C.2 Problemfeld 2: Ziele im Wegweisungssystem

Da der Aufbau des Wegweisungssystems für zielorientierten Benutzer (siehe Abschnitt B) erfolgt, sollten schwerpunktmäßig Ziele und nicht Routen auf den Wegweisern ausgewiesen werden.

Die Integration von einzelnen touristischen Routen (vor allem Radwanderwege) erscheint möglich und hat sich in der Praxis bewährt. Hier ist allerdings auf die Gestaltung der in die Wegweiser des Leitsystems aufzunehmenden Sujets besonderes Augenmerk zu legen. Diese müssen für die Benutzer der touristischen Route genauso eindeutig ihren Radwanderweg darstellen, wie sie für die ortsansässigen Radfahrer nicht zur Verwirrung führen dürfen.

Für den Radfahrer besteht eine Unzahl verschiedener Ziele im Siedlungsraum. Bei der Planung des für ortsansässige Radfahrer bestimmten Leitsystems ist davon auszugehen, daß die Zusammenhänge des Siedlungsraums im Großen bekannt sind (etwa die Lage einzelner Stadtteile zueinander). Die Führung im Leitsystem kann daher hierarchisch aufgebaut sein, d. h., daß die Radfahrer zuerst in den näheren Zielbereich (Nahziele, z. B. Stadtteil, Bezirk) gewiesen werden und dort eine Verteilung zu einzelnen Zielpunkten (Lokalziele) erfolgt.

Die Einführung einer drei- oder zweistufigen Zielhierarchie zur notwendigen Reduktion der Wegweiserangaben hat sich bewährt.

In der Praxis sollte die Zuordnung eines Ziels in eine Hierarchieebene allerdings pragmatisch gehandhabt werden. Wenn ungenutztes Platzangebot auf den Wegweisern besteht, können Ziele außer der hierarchischen Ordnung quasi voravisiert werden.

Viele Ziele der höheren Kategorien sind (Stadtteile, Ortsbereiche usw.) keine Punkt- sondern Flächenziele. Die Fragestellung, ab wann ein Ziel erreicht ist, muß für die Benutzer des Wegweisungssystems jedoch klar erkennbar sein. In vielen Fällen hat es sich daher bewährt, Flächenziele mittels zusätzlicher Angaben auf Punktziele zu reduzieren. Die allgemeine Bekanntheit dieser reduzierten Flächenziele (z. B. Kirchen, Schlösser, Parks, zentrale Plätze usw.) muß allerdings gegeben sein.

C.3 Problemfeld 3: Gestaltung der Wegweisungselemente

In gebotener Kürze soll in diesem Beitrag lediglich auf die Gestaltung der Wegweisertafeln eingegangen werden. Andere Elemente, wie etwa Bodenmarkierungen oder Fahrweggestaltung, die ebenfalls zur Orientierung der Radfahrer beitragen, sind im Leitsystem sehr wohl zu berücksichtigen und gegebenenfalls zum Einsatz zu bringen, werden hier allerdings nicht behandelt.

In kurzer Punktation sollen die wichtigsten Fragestellungen bei der Gestaltung der Wegweisertafeln beschrieben werden. Grundlage aller Überlegungen hat die Zweckmäßigkeit für den Radverkehr und die Wirtschaftlichkeit der Ausführung zu sein: - Form und Abmessungen der Wegweiser haben sich nach den darauf unterzubringenden Beschriftungselementen zu richten. Aus wirtschaftlichen Gründen, aber nicht zuletzt auch um die Ernsthaftigkeit des Verkehrsmittels Fahrrad zu

unterstreichen, wird empfohlen auf exotische Gestaltungsformen zu verzichten. Einfache Rechteck- bzw. Quadratformen haben sich in der Praxis bewährt.

- Die Größe der Beschriftungselemente muß so bemessen werden, daß eine Aufnahme der Wegweiserinhalte aus der Fahrt und ohne längere Ablenkung vom Verkehrsgeschehen stattfinden kann. Auch die Anzahl der Informationen pro Wegweiser ist auf ein verträgliches Maß zu beschränken. Die Autoren schlagen eine Anzahl von vier Zielangaben pro Wegweiser als durchaus vertretbar vor. Nur in Ausnahmefällen darf diese Anzahl auf maximal sieben Zielangaben erhöht werden. Die Angabe von Entfernungen auf den Wegweisern hat sich bewährt und ist bereits internationaler Standard. Der Radfahrer erhält so laufend Informationen über die noch zurückzulegende Strecke bis zu Ziel.
- Bei der Farbgebung der Wegweiser sollen die beiden Ziele „hohe Reflexionswerte“ und „Assoziation mit dem Radverkehr“ verfolgt werden. Auch hier wird empfohlen, von exotischen Gestaltungsmöglichkeiten Abstand zu nehmen. In Österreich haben sich fast ausschließlich die Farbgebungen in Grün und Weiß für den Radverkehr durchgesetzt. Die Farbgebung grüne Beschriftung auf weißem Grund hat dabei die Vorteile höherer Reflexionswerte und der eindeutigen Zuordenbarkeit zu Radverkehr (weiße Beschriftung auf grünem Grund wird dagegen auch für Hinweise zu lokale Zielen verwendet).

C.4 Problemfeld 4: Umsetzung der Planung

Die konzeptionelle Planung stellt das Routennetz sowie die Form und Gestalt der Wegweiser zur Verfügung. Bei der Umsetzung dieser Planungen sind mehrfache Routenbefahrungen unumgänglich.

Alle Schritte der Umsetzung müssen als zwingende Forderung vom Rad aus erfolgen.

Wichtig ist die optimale Situierung der Wegweiser im Straßenraum. Die Wegweiser sind immer vor dem Entscheidungspunkt anzubringen, da sonst die Leseentfernung zu groß wird, etwa bei der Aufstellung der Wegweiser erst hinter der betroffenen Kreuzung. Besonders in Acht nehmen sollte man sich vor zurückgestutzten Hecken oder entlaubten Ästen in der kalten Jahreszeit, sie können die Wegweiser richtiggehend verschwinden lassen.

Bei der Umsetzung ist auf eine zweckentsprechende Dokumentation aller Festlegungen zu achten, um den Informationsverlust zwischen Planer und Ausführendem gering zu halten. Besonders bewährt hat sich eine gut angelegte Fotodokumentation der einzelnen Standorte.

D RESÜMEE

Die Konzeption und Ausführung eines Leitsystems für den Radverkehr stellt bei Einhaltung der oben beschriebenen Planungsgrundlagen eine komplexe Aufgabenstellung dar. Immerhin ist ein vernetztes Routensystem mit Qualitätsanforderungen zu entwerfen, eine hierarchische Ziel-auswahl zu tätigen und die konzeptionelle Planung in eine ausführbare Form zu gießen. In der Konzeptplanung ist die engagierte Mitarbeit der für den Radverkehr zuständigen Verwaltungs-behörde eine beinahe unumgängliche Notwendigkeit.

- Geplante Maßnahmen im Radverkehr sind zu berücksichtigen,
- etwaige Problembereiche, die durch die Planung des Routennetzes aufgezeigt werden, einer Lösung zuzuführen und
- vor allem soll das Leitsystem ja in die Gesamtkonzeption des städtischen Radverkehrs eingebunden sein. Nur dadurch kann sichergestellt werden, daß mit dem Wegweisungssystem eine praktisch wirksame Maßnahme zur Verbesserung der Radverkehrsinfrastruktur gesetzt wird.

Zwar entstehen bei der Umsetzung eines flächendeckenden Leitsystems für den Radverkehr eher geringe Kosten im Verhältnis zu anderen baulichen Maßnahmen. Es muß aber darauf hingewiesen werden, daß das System letztendlich auch bei guter Erstplanung und exakter Umsetzung nur eine kurze Zeit ohne Wartung auskommt. Die vorhandenen Wegweiser sind nach zu ergänzen (Sammler entwerfen immer wieder einzelne Stücke) oder zu ändern und neue Routen wollen erschlossen werden. Ohne zeitweilige Routenbefahrungen wird der lebende Organismus Radverkehrsleitsystem rasch seine Aktualität und Akzeptanz einbüßen.

WEDNESDAY

LITERATUR:

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ON A NEW APPROACH TO URBAN PLANNING, TRAFFIC NETWORK AND STREET DESIGN WITH SPECIAL FOCUS ON BICYCLING

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ENGLISH

ON A NEW APPROACH TO URBAN PLANNING, TRAFFIC NETWORK AND STREET DESIGN WITH SPECIAL FOCUS ON BICYCLING

- 1 Build greenways, where any confrontation with motor traffic is practically non-existent, in green corridors without motor traffic and with grade-separated intersections; e.g., in park areas and along through traffic routes.
- 2 Build bicycle tracks along all the main streets (50/30 km/h streets)
- 3 Ensure that cars do not drive through zebra crossings at speeds above 30 km/h. If necessary, physical traffic-calming measures are to be used.
- 4 Build special bicycle roads in residential areas where priority gives to bicycle traffic. If necessary, physical traffic-calming measures are to be used.
- 5 Ensure that cars cannot drive faster than 30 km/h in all residential streets (30 km/h streets). If necessary, physical traffic-calming measures are to be used.
- 6 Build separated bicycle paths along through traffic routes.
- 7 Build grade-separated intersections where pedestrians and cyclists cross through traffic routes.

DEUTSCH

ÜBER EINEN NEUEN ANSATZ FÜR VERKEHRS- UND STRASSENPLANUNG IN SCHWEDEN

Der Vision Zero zufolge wird die Geschwindigkeit als sehr wichtiger und grundlegender Faktor betrachtet. Vom Standpunkt der Verkehrssicherheit her werden folgende Aussagen getroffen:

1. Auf Straßen mit einem Risiko für Frontalzusammenstöße darf ein Auto nicht mehr als 70 km/h fahren.
2. Auf Straßen mit einem Risiko für seitliche Kollisionen darf ein Auto nicht mehr als 50 km/h fahren.
3. Auf Straßen, wo ein Auto einen Fußgänger oder einen Radfahrer niederstoßen könnte, darf ein Auto nicht mehr als 30 km/h fahren.

Mehr oder weniger als logische Konsequenz dieser grundlegenden Prämissen wurde in Schweden die folgende hierarchische Klassifizierung von Straßen nach der zulässigen Geschwindigkeit vorgenommen:

1. Straße außerhalb des Ortsgebiets mit 70 km/h / Verkehrsroute
2. Straße im Ortsgebiet mit 50/30 km/h / Hauptstraße / Hauptverkehrsader

3. Straße im Ortsgebiet mit 30 km/h / Wohnstraße
4. Straße im Ortsgebiet mit Schrittgeschwindigkeit / Woonerfs
5. Verkehrsflächen für Fußgänger und Radfahrer (Gehsteige, Fußwege, Plätze, Radwege etc.)

Außerdem wurde vorgeschlagen, die herkömmlichen 50km/h-Straßen im Ortsgebiet in 50/30 km/h-Straßen, 30 km/h-Straßen und Schrittgeschwindigkeitsstraßen umzuwandeln, wo immer Fußgänger, Radfahrer und motorisierter Verkehr zusammentreffen.

K NOVEMU POSKUSU PROMETNEGA NAČRTOVANJA IN OBLIKOVANJA ULIC NA ŠVEDSKEM

Glede na Vision Zero ("Vidnost Nič") je hitrost obravnavana kot zelo pomemben in integralni faktor. Iz stališča prometne varnosti je rečeno, da :

1. na cestah / ulicah, kjer je nevarnost čelnega trčenja, avto ne sme voziti hitreje kot 70 km/h ;
2. na cestah / ulicah, kjer je nevarnost bočnega trčenja, avto ne sme voziti hitreje kot 50 km/h ;
3. na cestah / ulicah, kjer lahko avto trči pešca ali kolesarja, avto ne sme voziti hitreje kot 30 km/h.

Kot več ali manj logična posledica le-teh osnovnih predpostavk, je bila na Švedskem predstavljena hierarhična razdelitev ulic in cest. Razdelitev, ki je osnovana na hitrosti, je sledeča:

1. 70 km/h cesta / prometna pot
2. 50 - 30 km/h ulica / glavna ulica / urbana cestna arterija
3. 30 km/h ulica / stanovanjska ulica
4. ulice s hitrostjo pešcev / pešcone
5. poti za pešce in kolesarje (pločniki, sprehajalne poti, trgi, kolesarske poti, itd.).

Predstavljena je bila tudi ideja spremembe standardnih 50 km/h ulic, v pozidanih območjih, na ulice 50 - 30 km/h, 30 km/h in na ulice s hitrostjo pešcev, kjerkoli pač pride do pomešanja pešcev, kolesarjev in avtomobilskega prometa.

KLJUČNE BESEDE : varnost cestnega prometa, Vision Zero, jasno razločena oblika, jasno prikazani različni tipi ulic

ON A NEW APPROACH TO URBAN PLANNING, TRAFFIC NETWORK AND STREET DESIGN WITH SPECIAL FOCUS ON BICYCLING

1 MOTIVES FOR THE NEW APPROACH

In the mid-fifties we decided in Sweden not to allow The cars to drive faster than 50 km/h in our cities. We also decided that the exceptions to that speed limit were to be very few. We adopted this decision because we wished to control the increasing volume of car traffic, but also because it was considered "comfortable" to drive the car at that speed, considering vehicle construction. Earlier there had been no speed limit at all for car traffic in cities.

The streets, or more specifically "the public places" in a town, are subject to many different demands and desires from its inhabitants. Needless to say, the possibility for driving a car in a city should exist, at least on most streets. However, it must also be possible to go by foot, by bicycle and by public transport. Public places in a town have a great inherent potential for both planned and unplanned encounters, which should be made possible, and even facilitated, by the design of the streets in a city. These places should be accessible to everyone, including children, the elderly and disabled persons, and certainly not only to those holding a driving licence. Guidelines for traffic planning were issued in Sweden in 1968 and in 1982. On both occasions, it was a clearly hierarchical division of the streets, but a 50 km/h speed limit was retained on practically all urban streets, contrary to what occurred in Holland and Denmark, for instance.

In order to satisfy as many as possible of the different demands and wishes that inhabitants have on public places in a town, we are now trying a partially new approach to traffic planning and street design.

1.1 Urban Street Classification

Until now, a street in a town has often been classified according to how it is used by cars. We talk about thoroughfares, through traffic roads, local streets, collector roads and access roads. The list does not stop here. However, from these

designations the impossibility of having one type of street for every word or phrase is quite obvious. Too many levels in a hierarchical structure becomes unwieldy and infeasible.

Also, it is a fact that a local street, for instance, does not only have local traffic. Very often there is traffic on a local street that is travelling more or less through; often there is also some collector traffic.

A system of street classification that could be very clear is based on the speed permitted. One advantage of this is the possibility of including an accurate description concerning function, street design and behaviour worth aiming at for each type of street.

1.2 A Street must have a Clearly Distinctive Design

One of the most important aims in connection with street design is to give people using the street the ability to understand - preferable intuitively

- what kind of street they are on,
- what (traffic) behaviour is expected from them, - what (traffic) behaviour they can expect from others.

For that reason the different types of streets must have their own clearly distinctive design. It must be obvious from this design what has been prioritized; e.g., vehicle accessibility on Traffic Routes / 70 km/h roads, and consideration to children, the elderly and disabled persons on woonerfs. This must be clearly understandable to adults, children, the elderly or disabled persons alike. And it must be understood intuitively.

1.3 Vision Zero and its Implication for the Design Philosophy of the New Approach

In Sweden, according to the present-day road traffic safety goals, the number of fatalities and injuries shall be continually decreased. Drawn to its logical conclusion, this ultimately means that no one will be killed or injured in road traffic.

The so-called Vision Zero states that:

In the long run, no one will be killed or seriously injured within the road transport system.

In order to fulfil this vision, the responsibility for road traffic safety must be shared according to the following principles:

- The designers of the system are always ultimately responsible for the design, operations and use of the road transport system and are thereby responsible for the level of safety within the entire system.
- Road-users are responsible for following the rules for using the road transport system set by the system designers.
- If road-users fail to obey these rules due to a lack of knowledge, acceptance or ability, or if injuries do occur, the system designers are required to take the necessary further steps to counteract people being killed and/or seriously injured.

With this Vision Zero approach, the concern for human life and health is an absolutely mandatory element in the design and functioning of the road transport system. This means that a road traffic safety mode of thinking must be clearly integrated into all the processes that affect safety within the road transport system. The level of violence that the human body can tolerate without being killed or seriously injured shall be the basic parameter in the design of the road transport system.

According to Vision Zero, speed is regarded as a very important and integral factor. From traffic safety point of view it is said that:

1. On roads/streets where there is a risk for head-on collision a car is not allowed to drive faster than 70 km/h.
2. On roads/streets where there is a risk for a side impact collision a car is not allowed to drive faster than 50 km/h.
3. On roads/streets where a car can hit a pedestrian or a bicyclist a car is not allowed to drive faster than 30 km/h.

More or less as a logical consequence of these basic premises, a hierarchical division of streets and roads, based on speed, has been introduced in Sweden as follows:

1. 70 km/h road or Traffic Route for long distance driving in a town, and where walking and cycling is prohibited
2. 50/30 km/h street or Main Street or Urban Arterial Road for driving between city blocks; however, when driving through zebra crossings, cars are not permitted to drive faster than 30 km/h.
3. 30 kilometres per hour street or Residential Street for driving within a residential district and for driving to or from a 50/30 km/h street.
4. Walking speed streets or Woonerfs for driving to a destination along the street or a street nearby.
5. Lanes for pedestrians and bicycles (pavements, footpaths, squares, bicycle paths, etc.) where motor vehicles are strictly forbidden, a domain exclusively for pedestrians and cyclists.

4 and 5 serve some traffic function, but are primarily intended to satisfy as many as possible of the different demands and wishes that the inhabitants of a town place on public places.

2 ACCOUNT OF THE NEW APPROACH

Hierarchical Division of Streets and Roads

2.1 Traffic Route or Urban Arterial Road or ..

Mostly 70 km/h, also 50 km/h, seldom 90 km/h

2.1.1 Function

The traffic route is intended for longer car journeys through built-up areas passing by one or more residential areas. The traffic route has through traffic and distribution traffic, but no access traffic. There is no parking permitted along a traffic route. A traffic route has no residential function.

The traffic routes consist of those streets and roads where priority is given to the efficient transport of people and goods by car at steady, moderate speeds within a street and road network capable of handling the prevalent traffic volume. The good accessibility offered to motorists within traffic routes is perceived as so advantageous that motorists choose this network for everything except the shortest local trips.

2.1.2 Street Design

The alignment of a traffic route is often of high standard and as far away from nearby buildings as possible. The traffic route is often, but not always, situated in suburban areas or on the periphery of built-up areas.

Distances between intersections are long enough for the intended speed level.

There is often road space available to enhance the safety of errant vehicles. Rigid, stationary objects in the roadside area have been either positioned, de-signed or shielded so as to protect motorists from serious injury in the event of head-on collision or side impact collision when unintentionally driving off the carriageway. The carriageway has often two traffic lanes for car traffic in each direction, some-times even more.

A traffic route is segregated from pedestrian and bicycle traffic, and any road connection to adjacent neighbourhoods is intended for car traffic only.

As there are no pedestrians or cyclists on a traffic route, there are no pedestrian pavements and no bicycle lanes.

Vulnerable road-users have been provided with grade-separated interchanges for crossing traffic routes. For movement parallel to the traffic route network, there are pedestrian and bicycle paths that have been totally segregated from car traffic; e.g. by vegetation, a safety fence or sufficient distance between the carriageway and the pedestrian and bicycle path.

Due to the longer distances between intersections, the accessibility gains on the 70-km/h stretches are more obvious. Despite the higher speed level, the environmental impact on the surroundings is moderate due to the distance to houses and buildings.

2.1.3 Behaviour

The speed limit is mostly 70 km/h on traffic routes. The speed at intersections may not exceed 50 km/h if there is any risk of side impact collision. This is ensured through traffic calming measures, e.g., a roundabout, or - ultimately - through road informatics technology.

If there are short distances between the intersections, the speed limit is restricted to 50 km/h, even on unbroken stretches. The speed limit is ensured through a traffic calming design, even on unbroken stretches. Motorists accept the low speed here because higher speeds would only have a marginal time-saving effect due to the relatively short distances between intersections. The speed limit is also felt to be well motivated due to the relative proximity of housing developments.

The speed 90 km/h is sometimes possible even in built-up areas if the alignment and the intersections are of very high standard, and if the distances between intersections are long.

In the year 2010 we think that traffic routes will constitute 10-20% of the street network in built-up areas in Sweden.

2.2 50/30 Street

Main Street or Urban Street or

2.2.1 Function

The main street is used by cars and by bicycles going from one neighbourhood to another nearby.

The traffic in a main street is mostly local; there is collector traffic and access traffic and sometimes even through traffic.

Parking can be permitted along a main street, especially in central areas.

A main street could have a business or a residential function. Also a main street is often the showcase window of the neighbourhood, with shops and other business activities, creating the need for loading and unloading areas and kerbside parking.

Very often a main street is not a boundary between two neighbourhoods, and therefore pedestrians, bicyclists, children, the elderly and disabled persons often need to cross it.

2.2.2 Street Design

The carriageway normally only has two lanes for ordinary car traffic. The main street also has wide bicycle paths and wide pedestrian pavements, affording cyclists and pedestrians good accessibility, safety and security. Furthermore, these wide walk-ways and paths provide the potential for creating an attractive, pleasant street space that is also environmentally suitable for children, the elderly and disabled persons.

Where there is heavy bus traffic, the main street is designed with bus lanes.

An intersection between two main streets always has pedestrian and bicycle crossings. These crossings are designed so that a car cannot drive through them at speeds exceeding 30 km/h, keeping in mind children, the elderly and disabled persons. Some intersections, where there is a special need, are designed as a pedestrian pavement on which cars are not permitted to drive faster than walking speed; i.e., between 5 and 10 km/h.

On unbroken stretches where there is no crossing pedestrian or bicycle traffic, cars are permitted to drive a maximum of 50 km/h.

Where the situation demands and city plans permit, the main street has a central reserve equipped with a safety fence to ensure that pedestrians and cyclists cross the street only at places designated for this purpose.

There are special areas for loading and unloading on main streets but as little kerbside parking as possible.

The main street is designed so that pedestrians and cyclists are given as much space as possible, while the area for car traffic is limited in accordance with the purpose of the street traffic. As far as possible, destination points in the surroundings are concentrated and located so that pedestrian and bicycle traffic needing to cross a main street can be steered naturally to the pedestrian and bicycle crossings.

2.2.3 Behaviour

Pedestrians and bicyclists cross a main street at designated pedestrian and bicycle crossings.

In the year 2010 we think that main streets will constitute 20-25% of the street network in built-up areas in Sweden.

2.3 30 km/h Street

**Residential Street, Wohnstrasse,
or Rue Residentielle, or**

2.3.1 Function

The residential street is a street in a residential area, where priority is given to the local inhabitants, thus designating its function. The residential street shall be an attractive, pleasant street space and an environment suitable for children, the elderly and disabled persons.

As far as vehicles are concerned, a residential street is used only by local bicycle and car traffic that originates in or has a destination within the neighbourhood. Residential streets nearly always have access traffic, sometimes collector traffic, but never through traffic.

2.3.2 Street Design

A residential street has pedestrian pavements and a carriageway. The carriageway is as narrow as possible, i.e., between four and six meters. Thus, there is space for the pedestrian pavement to be as wide as possible, providing great potential for creating an attractive, pleasant street area suitable for children, the elderly and disabled persons alike.

Especially in the inner city areas, residential streets provide part of the need for short-time parking. Parking spaces are designed and located with care, paying consideration to their being an aesthetically attractive element within the street environment.

A residential street has no marked pedestrian or bicycle crossings, no bicycle paths and no traffic signals. Sometimes there are bicycle roads in residential areas.

Traffic calming measures guarantee safe, secure interaction between pedestrians, cyclists and motorists. One good traffic calming measure is an elevated crossing, signalling that in residential areas priority is given to pedestrians. This solution will help elderly people to move about, especially those in wheelchairs. It also makes pushing prams easier. Roundabouts represent another good traffic calming solution.

2.3.3 Behaviour

The nonnal way to move within a residential area is usually on foot or by bicycle; walking canes and wheelchairs are also prevalent as is the use of a "rollator" (a walking aid that is very common in Sweden). Young parents often push prams. Within a residential area it is natural to cross a street as a pedestrian or a cyclist arbitrarily, either any-where along the street or at street crossings.

In the year 2010 we think residential streets will constitute 25-30% of the street network in built-up areas in Sweden.

2.4 Wallcing Speed Street

Woonerf or Pedestrian Street or ...

2.4.1 Function

The woonerf is a communal outdoor space shared by everyone living by the street. It is a street especially for children, the elderly and disabled persons. A woonerf is an attractive, pleasant street space for meetings, play and recreation. It is used by cars and by bicycles only when they come from a destination or go to a destination along it or a street close nearby.

2.4.2 Street Design

The woonerf is designed as communal outdoor space shared by everyone living by the street.

The entire woonerf is intended for everybody; it is not divided into separate lanes for different types of "traffic". It is designed entirely at the same level; i.e., there are no kerbs.

2.4.3 Behaviour

The street is designed and regulated so that the maximum speed for cars does not exceed walking speeds; i.e., 5 to 10 kilometres per hour, with an average speed of around 7 kilometres per hour depending on who is walking.

This type of street has often been created on the initiative of the property owners and the local residents, with both groups supporting the construction and maintenance operations.

Pedestrians and bicyclists always have the right of way.

In the year 2010 we think that woonerfs will constitute 20-25% of the street network in built-up areas in Sweden.

2.5 Car free area

Lanes for Pedestrians and Cyclists

These include all the town footpaths and bikeways, walkways, parks, greenways, recreation areas, market squares and playgrounds as well as all the neighbourhood areas where cars have been prohibited.

2.5.1 Function

The car-free area in a town has a great inherent potential for both planned and unplanned encounters, which should be made possible and even facilitated, by the urban street design. In this type of area it is possible for pedestrians, bicyclists, children, the elderly and disabled persons to move around safely and securely in built-up areas.

A main objective of a car-free area is to be able to interconnect as many of its parts as possible and make it possible for people to walk or cycle within the area without having to confront the risks, conflicts and disturbances associated with motor traffic.

2.5.2 Street Design

The walking areas and pedestrian and bicycle paths have moderately steep inclines, surfaces are smooth and even, and the street furniture is well designed. There are attractive outdoor spaces for meetings, play and recreation. There is good street lighting as well as other design details that make everyone, including children, the elderly and disabled persons, feel safe and secure.

Motor vehicles can be granted exemptions to enter the car-free area, but only on the terms set by pedestrians and cyclists. The car is not allowed to drive faster than a person can walk, and that ranges between 5 and 10 kilometres per hour, depending on who is walking.

2.5.3 Behaviour

Many car-free areas serve no traffic function at all. Some are particularly designed to enable the mobility of children, the elderly and disabled persons. Pedestrian pavements and bicycle lanes also serve a traffic function, and must be situated and designed accordingly. Bicyclists must be able to move at speeds up to 30 km/h on bicycle tracks and on certain greenways; however, in other places such as woonerfs, bicyclists are required to ride at walking speed.

3 THE NEW APPROACH IN REALITY

3.1 Demonstration Project / The Jönköping Case Study

A traffic system designed more or less according to the philosophy presented above entails an investment of slightly more than SEK 200 million in the Jönköping street network. This means approximately SEK 4,000 per inhabitant in the area in question. With an average depreciation period of 30 years and a 5% cost of capital, the annual cost of investment amounts to approximately SEK 13 million, or SEK 260 per inhabitant and year. The increased operational costs have been assessed at SEK 5.4 million per year, or a little more than SEK 100 per inhabitant and year.

In Sweden, about 7.2 million people live in urban areas. If the situation in Jönköping is considered to be representative, an application of the philosophy in whole Sweden means an investment need of slightly more than SEK 28,000 million. The increased operations and maintenance costs for this investment amounts to about SEK 750 million per year.

The purpose of this study has been to describe the measures required in the physical environment and to endeavour to provide a rough outline of the impact of the new traffic system. Space has not permitted a sensitivity analysis of the figures presented. On the other hand, an attempt has been made to describe the methodology used in each analysis to make it possible to evaluate the results.

In our assessment, the measures proposed in Jönköping will reduce the number of actual injuries in urban traffic by slightly more than 20%; i.e., from about 235 to about 186 per year. The reduction is greatest for serious injuries, which means an approximate 30% reduction in accident costs. This represents about SEK 40 million per year lower costs to society. Accidents reported by the police are expected to be reduced by 43%, from an average of 81 to 46 cases of injury per year.

That the reduction is not greater depends on the large number of accidents occurring between vulnerable road users only. This category of accident accounts for about 50% of all injuries incurred within the municipal network, and is an area upon which the measures contemplated will not have an impact. In order to be able to effect a reduction here, other measures are required, some of which would be undertaken within the physical environment, such as better cycle paths and better separation between cyclists and pedestrians.

The major safety gains are obtained on the local residential streets - speed limit 30 km/h and woonerfs - which account for two-thirds of the injury reduction and one-third of the investment costs. If, moreover, the speed limit is reduced to 30 km/h on 10% of the main streets normally used by vulnerable road users in addition to an implementation of a 30 km/h limit - or alternatively physical separation measures - at certain selected spots where vulnerable road users normally cross main streets, almost 90% of the reduction "possible" will be covered. In such a case, approximately 60% of the total investment costs will have been consumed.

One could pose the question as to the impact that modest re-construction measures and a posted 30 km/h speed limit would have on local residential streets. In the city of Graz, such a system has been implemented for a few years. Traffic supervision in Graz is, nonetheless, considerably more intensive than in Sweden. It has been possible to reduce the cases of injury reported by the police in Graz by about 25%. The reduction in our case is expected to be 43%.

A reduction in the average speed of motorised vehicles entails longer travel times. These are expected to increase on major through streets by almost 1,800 hours on weekdays, which corresponds to slightly more than two minutes per inhabitant and day. It might be considered questionable to assess this in another way, but if the Swedish National Road Administration project analysis principles were to be applied, this time consumption represents an additional cost for motorists of SEK 43 million per year. In this case, it has not been possible to estimate the gains in travel time won by pedestrians and cyclists through the implementation of more physical separation measures nor their shorter waiting times at junctions. Neither has it been possible to estimate the shorter waiting times experienced by motorists exiting local residential streets.

Public transport is hit hardest by the speed reduction measures normally used to implement speeds of 30 km/h (like speed bumps designed according to the Watts model). If users of public transport services are to be able to maintain travel times, the frequency of service must be increased. According to our calculations, this entails doubling the vehicle fleet necessary, which corresponds to an additional cost of about SEK 40 million per year. Measures catering to buses, i.e., those which are not more speed-restrictive to buses than to cars, are more or less necessary on streets with scheduled bus traffic. Such measures limit the increase in cost to about SEK 3 million per year while maintaining the average travel time.

Emergency rescue vehicles will be affected in the same way. Preliminary calculations made by the Fire Department show that the ensuing extra time entailed would lead to an increase in human injury and in property damage amounting to about SEK 3 million per year within the area under study; i.e., about SEK 60 per inhabitant. The impact on ambulance

and police vehicles has not been investigated.

Goods distributors within urban areas will in all probability react negatively to the measures due to reduced accessibility and increased travel times.

Vehicle costs will probably also increase. No calculations have been made within this project.

A more in-depth analysis of the environmental impact has not been conducted. The Swedish Road and Transport Research Institute has, on the other hand, calculated the implications of a general reduction in the speed limit to 30 km/h. The results corroborate what has been found in German experience: certain types of vehicle emissions will increase while most will decrease. In general, the noise level can also be expected to decrease somewhat.

Re-construction of the traffic environment according to the proposed concept has an impact upon several other factors in society in addition to those mentioned in the foregoing. There can be a long-range social effect that more people will want to live centrally in cities, in part, perhaps due to the reduced barrier effect of traffic. Elevations of the carriage-way at street intersections to walkway level, in combination with lower traffic speeds, will substantially ease access for children, the elderly and physically disabled persons. The measures proposed will also create a more aesthetically pleasing traffic environment in our cities. Certain sources maintain that these measures will moreover lead to positive effects within many different areas of society.

When compiling the results from the impact analysis, there is an obvious risk of misinterpretation, especially regarding those evaluations expressed monetarily. There are several assumptions and circumstances that are not illuminated. For instance, it is not entirely certain that effects expressed in the same terms can be directly compared, even if the term of measurement is money. Despite these reservations, an attempt at an overall compilation of results is presented in the following table.

Table 1 Impact of the application of "Vision Zero" on the physical environment in urban areas (test site Jönköping)

Impact on	Effect	Cost / inhabitant	Cost / year
Investments		+ 4,000 SEK	+ 13 million SEK
Operations / Maintenance		+ 100 SEK / year	+ 5.4 million SEK
Injuries	ca 20% fewer	- 800 SEK / year	- 40 million SEK
Travel time in cars	+ ca 1,800 hours / day	3.30 SEK / day	+ 43 million SEK
Travel time for vulnerable road users	reduction	- ?	- ?
Public transport	at least 3 new buses	+ 60 SEK / year	+ 3 million SEK
Fire department	greater delay	+ 60 SEK / year	+ 3 million SEK
Ambulance	greater delay	+ ?	+ ?
Police	greater delay	+ ?	+ ?
Goods distribution	more delivery vehicles	+ ?	+ ?
Vehicle emissions	somewhat reduced	- ?	- ?
Noise	somewhat reduced	- ?	- ?
Social structure	more people living in the city centre	- ?	- ?
Barriers	fewer and less forbidding	- ?	- ?
Disabled persons	enhanced possibilities	- ?	- ?
Aesthetics	positive	- ?	- ?
Social	enhanced possibilities	- ?	- ?
Miscellaneous			

The table shows that there are many questions that must be clarified before a complete impact analysis can be made. There is thus much leeway for several new studies and research projects.

Another important question focuses on how best to reduce accidents involving vulnerable road users only. These represent half of the injuries in Jönköping. Needless to say, several different measures must be taken, but what are the measures that can be suitably undertaken in the physical environment?

3.2 Planned Demonstration Projects

The Municipalities in Sweden are now working on elaborating a street classification according to the philosophy contained in this paper.

Based on the results of this classification, plans are currently underway to demonstrate and evaluate Vision Zero and the five types of streets described. In 1999, at least seven different demonstration projects that adhere as far as possible to the philosophy have been scheduled.

SLOW DOWN! - THE CAMPAIGN FOR LOWER SPEEDS IN THE U.K.

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ENGLISH

SLOW DOWN! - THE CAMPAIGN FOR LOWER SPEEDS IN THE U.K.

Improving the public perception of safety is an essential element of increasing bicycle use, and lower speeds can be an important part of this.

The CTC was a founder member of the Slower Speeds Initiative, a coalition of nine transport lobby groups, begun in March 1998. The author at present chairs the Initiative.

Our main aims are:

- To achieve lower speeds on most urban and rural roads
- To improve the enforcement of existing speed limits
- To seek greater punishment for speeding drivers who kill and injure road users
- To change vehicle design and technology, so as to reduce speed at source

The Initiative has already achieved another aim. As part of the UK's new Integrated Transport Policy the Government has announced a national review of all aspects of speed and speed limits.

This work has brought the CTC into closer contact with other groups, representing local communities, pedestrians and children. There has also been a very positive response from many local municipalities.

DEUTSCH

LANGSAMER! DIE BRITISCHE KAMPAGNE ZUR HERABSETZUNG DER GESCHWINDIGKEITSLIMITS

Das öffentliche Gefühl der Sicherheit zu verbessern ist ein wichtiger Faktor, wenn wir den Fahrradverkehr fördern möchten, und eine Herabsetzung der zulässigen Geschwindigkeiten ist eine wichtige Maßnahme, um dies zu erzielen.

Der CTC gehört zu den Gründungsmitgliedern der Slower Speeds Initiative, einer Koalition aus neun Verkehrslobby-Gruppen, die im März 1998 ins Leben gerufen wurde. Der Autor ist momentan der Vorsitzende dieser Initiative.

Unsere Hauptzielsetzungen lauten wie folgt:

- Verringerung der Geschwindigkeit auf den meisten Straßen im Stadtgebiet und im ländlichen Bereich.
- Verbesserung der Überwachung bestehender Geschwindigkeitsbeschränkungen
- Bestrebungen zur Verschärfung der Strafen für Raser, die andere Straßenbenutzer verletzen oder töten.
- Änderung der Fahrzeugkonstruktion und -technologie, so daß die Geschwindigkeit bereits an der Quelle reduziert wird.

Ein anderes Ziel hat die Initiative bereits erreicht. Als Teil der neuen integrierten Verkehrspolitik Großbritanniens hat die Regierung eine Überprüfung aller Aspekte in Bezug auf Geschwindigkeit und Geschwindigkeitsbeschränkungen auf-

nationaler Ebene angekündigt.

Diese Arbeit hat den CTC in engeren Kontakt mit anderen Gruppen gebracht, die lokale Gemeinschaften, Fußgänger und Kinder vertreten. Außerdem gab es sehr positives Feedback von vielen lokalen Gemeinden.

UPOČASNITE! - KAMPANJA ZA ZMANJŠANJE HITROSTI V VELIKI BRITANJI

Z izboljšavo javnega doživetja varnosti, se kot bistven element povečuje tudi uporaba kolesa; manjše hitrosti pa so sestavni del tega.

"CTC" je ustanoviteljski član iniciative Počasnejše hitrosti, zveze devetih prometnih političnih skupin, ki so pričele delovati marca, leta 1998. Avtor je trenutno na čelu te iniciative.

Naši glavni cilji so:

- doseči manjše hitrosti na večini urbanih in podeželskih cestah,
- izboljšati uveljavitev že obstoječih hitrostnih meja,
- poiskati večje kazni za prehitre voznike, ki ubijajo ali poškodujejo uporabnike cest,
- spremeniti obliko in tehnologijo vozil ter zmanjšati hitrost že na samem začetku.

Omenjena iniciativa je dosegla še drugi cilj. Kot del nove Integralne transportne politike v Veliki Britaniji, je vlada objavila nacionalni pregled vseh aspektov hitrosti in hitrostnih omejitev.

Prispevek je zbližal "CTC" z drugimi skupinami, ki zastopajo lokalne skupnosti, pešce in otroke. Prišlo je tudi do zelo pozitivnega odziva lokalnih mestnih oblasti.

SLOW DOWN! - THE CAMPAIGN FOR LOWER SPEEDS IN THE U.K.

The UK has been a late starter with regard to sustainable transport. It was not until 1992 that our Parliament passed a Traffic Calming Act - and it was significant that the wording was devised not by the Government but by Friends of the Earth. Throughout the 1980s Mrs Thatcher's government deregulated Transport and weakened our planning laws. The 'integrated' approach of much of Western Europe - which greatly improved cycle safety and increased cycle use - passed us by.

Fortunately, change in recent years has been rapid. Whilst some of this has been due to effective lobbying by environment groups, it is also clear that widespread public protests over further road-building - especially in Birmingham, London and Twyford Down (southern England) shook Government thinking. The result was a national Policy on Sustainable Development (1994), a National Cycling Strategy (1996), an Integrated Transport Strategy (1998) and forthcoming national policies in 1999 on Walking and Speed.

The review of Speed policy is particularly welcome, as this was one of the main demands of the Slower Speeds Initiative. This is a working coalition of nine lobby groups, chaired by myself, and set up in 1997. Its members are: the Children's Play Council, Cyclists Touring Club (now 'CTC'), Environmental Transport Association, Pedestrians' Association, Pedestrians' Policy Group, Road Danger Reduction Forum, RoadPeace, Sustrans and Transport 2000.

These bodies are united in a belief that Road Safety is a much wider issue than simply the reduction of casualties. Use of this formula has presented us with a paradox. With fewer than 3,500 road deaths each year (half those of France or Germany) our politicians believe we have 'the safest roads in Europe'.

The reality is that - for many - we have the most dangerous. Much of the casualty reduction has been achieved by pedestrians and cyclists making fewer journeys, as they perceive the road environment to be too dangerous. The UK's casualty record for child pedestrians is - by official admission - almost the worst in Western Europe.

Also, because of our late start with modern policies, we had a great back-log of neglect with which to deal. At one time it was calculated that it would take nearly a century to traffic calm our urban roads.

Many official attitudes remained badly dis-connected to new Transport thinking - the police thought their main task was to 'keep the traffic moving', there was a reluctance to fund the use of speed control cameras, and the UK has a particularly un-satisfactory legal system which ignores the consequences of motor crime. In this way drivers can kill a cyclist and escape with a very small fine, because they did not 'mean to' kill. Meanwhile car manufacturers openly boasted that their vehicles could do twice the legal limit - and of course always had 'lightning acceleration'.

Therefore the Initiative called for six main measures:

1. Widespread use of good quality traffic calming.
2. Much greater use of speed-enforcement cameras, with police and local government allowed to 're-invest' the cash from convictions into more cameras.
3. Making traffic law enforcement a central part of police work.
4. Reforming traffic law to end the bias in favour of motorists.
5. Reforming the vehicle, in particularly by the use of speed limiters for cars.
6. Informing the public, most of all through a review of speed policy.

We began our campaign with the publication of a colourful, popular-style leaflet, called 'Why Reduce Traffic Speeds?'. The only problem was that this turned out to be too popular. Cyclists and pedestrian bodies, environmental groups and local residents ordered it in huge numbers, and our first print run of 20,000 was soon exhausted. So was our (very) part-time Coordinator, who also received detailed enquiries begging for specialist help in local situations.

Fortunately our group had reasonable funds from its founding members, notably CTC and Sustrans. We were able to re-print the leaflet, produce a Briefing for politicians, write to many national health and environmental organisations, and hold our first conference (in the West Midlands).

There were very clear themes in all the responses we received. People felt very angry that they were being terrified off the road, that their communities in towns and countryside were being 'taken over' by fast traffic, and that organisations they turned to for protection - local councils and the police - did not have the resources, the powers or (sometimes) the interest to protect them. As we had always suspected, speed was a 'quality of life' issue, not merely a technical argument over different forms of traffic calming.

This came across very clearly at our first conference. We had asked local communities in Herefordshire, a 'typically English' rural area in the West Midlands, to give presentations to an audience which included national figures from the Police and our Department of Transport, Environment and the Regions (a new, combined Ministry since May 1997). The speakers were passionate and angry about how their rural region was being ruined by traffic noise, speed, smells and threat.

From the response of such people and of our correspondents it was also clear that the Initiative was correct in emphasising some of the wider aspects of speed. There include:

- Toxic vehicle emissions. These increase considerably at speeds above 80 kph.
- CO2 emissions. Transport is a major and growing contributor to global warming gases.
- Health. In addition to vehicle pollution, high vehicle speeds and volumes deter journeys on foot or by cycle, with adverse health implications.
- Urban regeneration. One of the great challenges for Western lifestyles is to 'make cities liveable again', thereby reducing sprawl and the need for long commuter journeys.
- Social equity. Not only are the poor denied access to much of the transport system, their children are five times more likely to be killed on the road than the more prosperous.
- Rural tranquillity. High speeds 'fragment' our remaining country areas; deter journeys on foot, bicycle and horse-back; and increasingly contribute to death and injury problems more serious than in towns.
- Distortion of travel patterns. As noted above, speed artificially suppresses journeys on foot or by cycle. It also encourages urban sprawl, as road 'improvements' encourage longer, faster car journeys. Lower road speeds over long journeys make rail more competitive - for goods and passengers.

For cyclists this last point is most important. Lower vehicle speeds dramatically improve road safety, and the public perception of this, allowing them to return to cycling and/or to cycle more often. There seems a general consensus that this was one main element in the 'cycling revival' in countries such as Sweden, Denmark, Switzerland, Germany and the Netherlands during the 1970s and 1980s.

In 1995 the CTC re-worked some Government calculations about the willingness to cycle. Simply doubling the safety rate (in terms of numbers of journeys) meant that the modal share of cyclists trebled in cities such as Birmingham and Nottingham.

These calculations are supported as the results of Britain's first 20 mph zones (32 kph) come in. Child cyclist casualties fell by nearly half, child pedestrian accidents fell 70%.

There is, of course, a continuing vigorous debate about when and where lower speeds are 'appropriate'. We believe our

Government should be brave enough to do some trials on this. Another difficult area is how far lower limits have to be 'self-enforcing' through physical measures. As part of the new devolution of government within the UK Scotland is already developing a different view on this, and is indeed doing widespread trials.

What was clear from our correspondence was that local government in the UK was also moving quickly to respond to the issue. York City Council and Devon County Council both developed multi-disciplinary Speed Management Plans. Many Councils welcomed the high public profile we were giving to the issue.

The Scottish Council of West Lothian wrote to us: 'It is to be hoped that in 20 years' time the idea of vehicles travelling inches apart (NB - the UK is still reluctant to use metric measurements: Author) on unimproved roads at closing speeds of 120 mph, and of mixing pedestrians and cyclists at potentially lethal speeds will seem as archaic and uncivilised as open sewers down the middle of streets'.

Given the problems road traffic causes them, the medical profession were strangely reluctant to offer support. Children's organisations were the opposite: the main child care group, Barnados stated that: 'We are particularly concerned by the disproportionately higher number of children in rural areas who suffer injury, or death due to road traffic accidents, many of which are directly associated with excessive speed. While mortality due to road traffic accidents has been in decline for over half a century, this has been happening at the expense of children's freedom to roam and play in their local neighbourhoods'.

Meanwhile, national policy changes continue to be positive. The Government has shown increasing interest in the forceful road safety policies of the State of Victoria (Australia), which involve high levels of camera use and police enforcement.

It may liberalise the use of speed cameras. It is encouraging local councils to experiment with 10 mph 'Home Zones' (16 kph) on the Continental model. It has re-launched a 'Kill Your Speed' campaign, and has begun theoretical studies of the value of speed-limiters. There are important campaigns by RoadPeace (traffic victims' organisation) and the independent Parliamentary Advisory Council on Transport Safety (PACTS) to re-examine the whole issue of road traffic law and its implication.

ABOVE ALL, WE WERE VERY PLEASED THAT THE GOVERNMENT HAS ANNOUNCED A WIDE-RANGING REVIEW OF SPEED POLICY (NOT JUST LIMITS) WHICH WILL LOOK AT MOST OF THE ISSUES DISCUSSED ABOVE.

Finally, what lessons have we as cyclists learned and may wish to pass on to others?

1. Working in a coalition gives us greater strength. There is always the danger that cyclists by themselves are seen as a 'single issue' campaign.
2. Many of the issues are social and cultural. The technical aspect is mostly 'How to', not 'Why?'.
3. Therefore campaigning on 'quality of life' and 'equity' issues is important, especially in the local and national media, where the views of a privileged motorised minority can easily dominate.
4. However, as has repeatedly been shown by Werner Brog of SocialData Munich, politicians often have a seriously inaccurate view of public opinion.
5. The law is not always 'neutral'.
6. Logic does not always count. Children in the UK are fifty times more likely to be killed by a car than a 'prowling stranger' - yet our media usually portray the exact opposite.
7. Decisions about police policy, attitudes and money are crucial. Activists need to influence this at local and national level.
8. Schools, shops and residential streets are 'easy' areas to target for lower speeds.
9. Rural speeds are a fast-growing, emotional and controversial area.
10. Why should very large sums of public money be spent ameliorating the ill effects of the private sector? Speed limiters in cars, and then lower powered cars and trucks, are the real way forward. Obtaining this in Europe will require EU-wide coordinated action.

The municipality of Graz has shown that lower speeds are effective and popular. It is time the rest of us 'slowed down' as well.

A MODEL TO ASSESS APPROPRIATE SPEEDS FOR SAFE CAPACITIES IN MIXED-MODE TRAFFIC ENVIRONMENTS USING COMPUTERISED "DYNAMIC MODELLING"

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ENGLISH

A MODEL TO ASSESS APPROPRIATE SPEEDS FOR SAFE CAPACITIES IN MIXED-MODE TRAFFIC ENVIRONMENTS USING COMPUTERISED "DYNAMIC MODELLING"

This research project seeks to establish the utility of "dynamic modelling" for highway engineering application to explore appropriate speeds for safe capacities in mixed-mode traffic, to develop a methodology for such modelling and to support software development.

The mechanisms for controlling traffic in a 'sustainable' urban form are imprecise. The 'compact city' with a 'fine grained mix of uses' must have a mixed-use highway environment because without it, facilities will tend to be spaced too far apart for the 'benign modes' to be plausible alternatives to motor car use. British practice seeks to separate streams, speeds and modes of traffic but since this is unattainable in existing places the experience of cyclists in particular is one of continual threat. In the Netherlands, Germany and elsewhere the issue of how to make safe mixed-use streets has been accomplished heuristically(?) that is to say they have experimented with different physical installations to explore best practice. In Britain this form of enquiry is unpopular, politicians, highway engineers and transport planners fear the consequences of experiment.

By exploring a form of dynamic modelling, where 'ikons' are instructed with 'behaviour', a range of ikons representing, say, a pedestrian crossing the road, an unconfident cyclist (hugging the kerb), a loading vehicle (more or less carefully parked) and a string of other traffic which adjusts its behaviour to allow for the apparent available space in which a passing manoeuvre is possible. The model is adjusted to a physical design which allows different environmental traffic management models to be assessed for their flow capacities. Since total capacity is one of the key technical and political issues in any proposal to change the design of the road, especially those proposed to encourage walking, cycling, public transport and even on-street loading, a model as described would aid the tuning of speeds to maximise flow

WEDNESDAY

DEUTSCH

EIN MODELL ZUR BESTIMMUNG ANGEMESSENER GESCHWINDIGKEITEN FÜR SICHERE KAPAZITÄTEN IN GEMISCHTEN VERKEHRSUMGEBUNGEN UNTER VERWENDUNG COMPUTERISierter „DYNAMISCHER MODELLIERUNGSTECHNIKEN“

Dieses Forschungsprojekt versucht, die Nützlichkeit „dynamischer Modellierungstechniken“ für verkehrstechnische Anwendungen nachzuweisen, wenn es darum geht, angemessene Geschwindigkeiten für sichere Kapazitäten im gemischten Verkehr zu eruieren, eine Methodologie für eine solche Modellierung zu entwickeln und die Softwareentwicklung zu unterstützen.

Die Mechanismen zur Steuerung des Verkehrs in einer „nachhaltigen“ urbanen Form sind ungenau. Die „kompakte Stadt“ mit einem „feinkörnigen Nutzungsmix“ muß eine gemischte Straßenumgebung aufweisen, da ansonsten die einzelnen Verkehrsanlagen zu weit auseinander lägen, um die „gutartigen“ Verkehrsmittel noch als plausible Alternativen zum KFZ erscheinen zu lassen. In Großbritannien versucht man, Ströme, Geschwindigkeiten und Verkehrstypen zu trennen, doch da dies in bestehenden Umgebungen nicht erreichbar ist, fühlt sich insbesondere der Radfahrer permanent bedroht. In den Niederlanden, in Deutschland und anderswo wurde die Frage, wie man sichere gemischte Straßen schaffen kann, auf heuristischem Wege (?) gelöst. Das bedeutet, man hat mit verschiedenen baulichen Maßnahmen experimentiert, um die beste Lösung zu finden. In Großbritannien ist diese Art praktischer Versuche unpopulär. Politiker, Verkehrstechniker und Verkehrsplaner fürchten die Konsequenzen solcher Experimente.

Statt dessen untersuchen wir eine Art von dynamischer Modellierung, bei der „Symbole“ mit „Verhalten“ ausgestattet

werden, so daß eine Reihe von Symbolen beispielsweise für einen die Straße überquerenden Fußgänger, einen furchtsamen Radfahrer (der am Randstein klebt), ein (mehr oder weniger sorgfältig geparktes) Fahrzeug im Zuge der Beladung und eine Reihe anderer Verkehrsteilnehmer steht, wobei das jeweilige Verhalten so angepaßt wird, daß dem offensichtlich verfügbaren Platz, der für ein Vorbeifahrmanöver zur Verfügung steht, Rechnung getragen wird. Das Modell wird jeweils an bestimmte physische Gegebenheiten angepaßt, was die Untersuchung unterschiedlicher Verkehrssteuerungsmodelle auf ihre Flußeigenschaften hin ermöglicht. Da die Gesamtkapazität einer der wichtigsten technischen und politischen Faktoren jedes Vorschlags für eine Umgestaltung einer Straße ist - insbesondere wenn es um eine Förderung von Fußgängerverkehr, Fahrradverkehr, öffentlichem Verkehr oder sogar Ladetätigkeit auf der Straße geht - würde ein Modell wie das oben beschriebene helfen, die Geschwindigkeiten so einzustellen, daß der Verkehrsfluß optimiert wird.

MODEL DOLOČITVE PRIMERNIH HITROSTI ZA VARNOST V MEŠANEM PROMETU, Z UPORABO RAČUNALNIŠKEGA "DINAMIČNEGA MODELIRANJA"

Dani raziskovalni projekt se ukvarja z ustanovitvijo koristnosti "dinamičnega modeliranja", ki se nanaša na vodenje glavnih prometnih žil, da bi raziskali ustrezne varnostne hitrosti mešanega prometa. Projekt se ukvarja tudi z razvojem metodologije takšnega modeliranja in s podpiranjem razvoja software-a.

Mehanizmi kontroliranja prometa v "znosni" urbani obliki so netočni. "Zgoščeno mesto" z "jasno mešanico uporabnikov" mora imeti mešano okolico glavnih cest, saj bi bile infrastrukture brez njih razmaknjene predaleč stran od "prijaznejših oblik" verodostojnih alternativ, glede na uporabo avtomobila. Britanska praksa skuša ločiti smeri, hitrosti in oblike prometa, čeprav je to v obstoječem prostoru nedosegljivo, saj so po dosedanjih izkušnjah kolesarjev le-ti v stalni nevarnosti. Na Nizozemskem, v Nemčiji in drugje so dosegli varnost mešanih ulic hevristično, kar pomeni, da so preizkušali različne fizične namestitve, da bi dosegli svoj namen. V Britaniji je ta oblika preiskav nepopularna, saj se politiki, avtocestni inženirji in prometni načrtovalci bojijo posledic preizkusa.

Z raziskovanjem oblike dinamičnega modeliranja, kjer so "ikone" predstavljene z "obnašanjem", se predstavi vrsta ikon ; recimo: kolesar prečka cesto, nezaupljivi kolesar (oklepajoč se robnika pločnika), natovarjajoče vozilo (bolj ali manj pazljivo parkirano) ter dolga vrsta ostalega prometa, ki se prilagaja obnašanju na vidnem prostem prostoru, kjer je možno manevriranje. Model je prilagojen fizični obliki, ki dovoljuje različnim ekološko - prometnim modelom določitev njihovih tokovnih kapacitet. Glede na to, da je popolna kapaciteta ključno tehnično in politično vprašanje v vsakem predlogu, lahko spremeni obliko ceste. To je še posebno možno s predlogi, ki vzpodbujajo pešačenje, kolesarjenje, javni promet in celo cestno natovarjanje. Opisani model bi pripomogel k usklajevanju hitrosti s povečanim tokom.

A MODEL TO ASSESS APPROPRIATE SPEEDS FOR SAFE CAPACITIES IN MIXED-MODE TRAFFIC ENVIRONMENTS USING COMPUTERISED "DYNAMIC MODELLING"

ABSTRACT:

This paper presents computer experiments on object flows (representing pedestrians, vehicles) by the use of multi-agent simulations. The project seeks to establish the utility of "dynamic modelling" for application in highway layout design. Computer icons, instructed with a range of representative behaviours, are used to model the flow implications of different speeds in mixed-mode traffic, to develop a methodology for such modelling and to support software development. The project aim is to produce a visual tool to explore safe flows for places which are busy with traffic.

PREAMBLE TO THE RESEARCH: URBAN FORM

The urban form which can be read as being the goal of transport planners and engineers, in the United Kingdom, is one which gives priority to motor traffic. This is not to claim that the only interest of engineers is to accommodate this traffic

but since this activity (a) is clear and understandable; (b) it consumes vast amounts of capital and is therefore important, and; (c) is more or less 'scientific'; -it seems practical that the complex, subtle and political aspects of accommodating mixed modes of traffic and land uses are best left for others.

INCONVENIENT RESTRICTIONS

Much traffic modelling treats traffic as water, presumes that the amount is fixed or growing and that the engineering problem is to design roads and junctions to cope with the pressure. "Coping" with traffic frequently has the consequence of imposing inconvenient restrictions on different classes of road user. For example we see pedestrian guard railing to control walking behaviour; cycle paths displaced onto the foot-path to give more useable carriageway width to motor traffic; and parking/loading bans to remove hindrance to traffic flow. All these methods and more are applied to roads which are clearly places, local centres, but whose local character is eroded initially by the presence of traffic and subsequently by the designs of engineers seeking to alleviate traffic congestion.

GUIDANCE TO ENGINEERS AND PLANNERS

Under the guise of achieving safe and pleasant urban areas, free from motor traffic impacts, an effective segregation of movement is the current approach to urban layout. The modern use of this conceptual priority is founded in the report, *Traffic in Towns*¹, known as the Buchanan Report, a charismatic and comprehensive document which had international resonance. The report explored, on the one hand, how to move motor traffic on purpose-designed road layouts and on the other hand defined the scale of the motor traffic intrusion problem which established environmental areas, where extraneous traffic would be excluded.

Current guidance in the form of *Transport in the Urban Environment*² has a subtler, four part, characterisation of road types but the basic split is still present. The Minister for Transport writes that-

"The guidance, like its predecessor *Roads and Traffic in Urban Areas*³, supports the development of a functional hierarchy of roads in order to reduce conflicts between the different uses of the road system. Applied with appropriate discretion, the concept of a functional hierarchy of roads is a useful planning tool. However, we must - as is emphasised in the guidelines -consider wider policy objectives including those aimed at reducing the need to travel."⁴

For Transport Planners, Engineers and Urban designers the problem is that the document describing the end of the functional hierarchy, *Design Bulletin 32*⁵, has little expectation of any integrated functioning between the movement system and the environmental area.

Since daily experience in established urban areas is of a coexistence between these two ends of the hierarchy it seems axiomatic that a functional separation will result in fundamental changes in the patterns of daily life, shopping and social exchange. For instance, for motor traffic a functional hierarchical layout fixes the routes to be used and thus maximises the distance of every motorised journey. With a functional hierarchy it follows that busy routes, the routes that have focused retail and business in the traditional road network, will exclude access to retail and business in deference to their movement function.

This change is increasingly the reality today, leading to great concern over the demise of the 'High Street' and the location of the majority of our regular shopping in car-dominated out-of-town superstores⁶. The Minister of Transport claims that: -"rather than encouraging greater car travel, and discouraging walking and cycling, one of the main aims of DB32 is to encourage residential road layouts which are visually attractive, secure and free from traffic nuisance. The guidance recognises the different nature of residential roads compared to the urban road system and advises that the needs of pedestrians and cyclists should be given priority over the use of motor vehicles."⁷

¹ *Traffic in Towns: a study of the long term problems of traffic in urban areas*, 1963, HMSO, London

² *Transport in the Urban Environment*, 1997, The Institute of Highways and Transportation, London

³ *Roads and Traffic in Urban Areas*, 1987, The Institute of Highways and Transportation, London

⁴ Gavin Strang MP, Minister for Transport, personal correspondence, 18 September 1997.

⁵ *Residential Roads and Footpaths: Layout considerations*, (*Design Bulletin 32*), Second Edition, 1992, Department of the Environment and Department of Transport, HMSO, London

⁶ see for example Raven H, Lang T, & Dumonteil C, 1995, *Off Our Trolleys: Food Retailing and the Hypermarket Economy*, IPPR, London

⁷ ibid.

There is thus a dichotomy in current philosophy and practice which this research project aims to focus on. By modelling both behaviour and capacity in a mixed-mode traffic environment it is intended that parameters can be defined that enable a maximisation of benefits to all road users, from pedestrians to drivers.

SUSTAINABLE URBAN FORM AND THE COMPACT CITY

The mechanisms for controlling traffic in a 'sustainable' urban form are imprecise. The 'compact city'⁸ with a 'fine grained mix of uses'⁹ must have a mixed-use highway environment because without it, facilities will tend to be spaced too far apart for the 'benign modes' of walking and cycling to be plausible alternatives to motor car use. British practice seeks to separate streams, speeds and modes of traffic but since this is unattainable in existing places the experience of non-motorised users, cyclists in particular, is one of continual threat¹⁰. In the Netherlands, Germany and elsewhere the issue of how to make safe mixed-use streets has been accomplished heuristically, that is to say they have experimented with different physical installations to explore best practice. In Britain this form of enquiry is unpopular, politicians, highway engineers and transport planners fear the consequences of experiment. The threat of legal action stultifies many proposals.

THE CURRENT OPPORTUNITY

In the current period the mould breaking work of Phil Goodwin (Oxford University, Transport Studies Unit) for SACTRA (1994)¹¹, finally pushed government into acknowledging that traffic growth would always outstrip road provision. Further work by his unit, now at University College, London, shows that reductions in road infrastructure capacity have not been accompanied by unacceptable congestion (Sally Cairns et al, 1998¹²). However the mechanisms for controlling traffic in a non-traffic generating, 'sustainable' urban form are imprecise, to say the least. There are no rules and little guidance for a new mixed traffic environment. This research project proposal, in seeking to establish the utility of "dynamic modelling" to predict appropriate speeds for safe capacities in mixed-mode traffic environments, is designed to bring together the hitherto discrete areas of quantitative traffic handling and qualitative urban layout design.

INTRODUCTION TO SIMULATING FLOWS OF PEDESTRIAN AND VEHICLES

Recently there has been an increasing interest in looking at urban environments as complexity systems (e.g. Allen 1997¹³), and the notions of self-organisation and fractal cities are frequently utilised to characterise the complexity of urban environments. A range of simulations with cellular automata have been conducted to illustrate the formation of urban morphology, for example, simple rules assigned to local cells could generate global spatial patterns (Batty and Xie 1997, White and Engelen 1997¹⁴).

The complexity of urban environments involves various aspects, but basically two can be identified. The first is concerned with the evolution of urban structure, i.e. the formation of urban form, and the second is more to do with the social activities of humans within urban environments, for instance, the pattern of pedestrian crowds and traffic flows. So far, relatively less effort has been made in the second. In this context, multi-agent simulation seems to be helpful in understanding the complexity of urban environments. This paper reports an extension to the range of novel experiments carried out by Bin Jiang, called SimPed¹⁵ using multi-agent simulations for pedestrian flows.

⁸ see Jenks M, Burton E, & Williams K, *The Compact City: a sustainable urban form*, 1996, Spon, London

⁹ see Murrain P, in Hayward R & McGlynn S (eds), *Making Better Places: Urban Design Now*, 1993, Butterworth Heinemann, Oxford.

¹⁰ Mary Sissons-Joshi, Graham Paul Smith, "Cyclists under threat: a survey of Oxford cyclists' perceptions of risk," *Health Education Journal* 51/4 (Winter 1992): 184-187, also Mary Sissons-Joshi, Victoria Senior and Graham Paul Smith, "A Survey of the Risk Perceptions of Cyclists and other Road Users", *Velo City 7 Conference Report*, 1993, Nottinghamshire County Council.

¹¹ SACTRA, Standing Advisory Committee on Trunk Road Assessment, *Trunk Roads and the Generation of Traffic*, HMSO, 1994 and Goodwin, Professor P., *Evidence to the Public Inquiry into the Oxford Transport Strategy*, Oxford City Council, 1998

¹² Cairns, S., et al, *Effects of Highway Capacity Reduction: the Evidence*, University College London, 1998

¹³ Allen P. M. (1997), *Cities and Regions as Self-organising Systems: Models of Complexity*, Gordon and Breach Science Publishers: Amsterdam.

¹⁴ Batty M. and P. Longley (1994), *Fractal Cities: A Geometry of Form and Function* (San Diego: Academic Press).

¹⁵ Bin Jiang, *SimPed: Simulating Pedestrian Flows in a Virtual Urban Environment*, 1998, unpublished paper, Centre for Advanced Spatial Analysis, University College London.

MULTI-AGENT SIMULATION AND URBAN ENVIRONMENTS

Multi-agent simulation is developed from the field of Distributed Artificial Intelligence (DAI). The idea of multi-agent simulation is that programmes exhibit behaviours entirely described by their internal mechanisms. By linking an individual to a programme, it is possible to simulate an artificial world inhabited by interacting processes. Thus it is possible to implement simulation by transposing the population of a real system to its artificial counterpart. Each member of a population is represented as an agent with built-in behaviours. Multi-agent simulation provides a platform to model situations in which there are large numbers of individuals and individuals have complex behaviours.

THE AGENT

The basic unit of a multi-agent simulation is the agent, where an agent is any actor in a system, any entity that can generate events that affect itself and other agents. Simulations consist of groups of many interacting agents. Agents can be pedestrians and vehicles; Buildings, shops and museums are objects; The physical open spaces of the urban system can be regarded as environment; and communications can occur either between agents or between agents and their environments. Agents can be characterised by their behaviour in response to their environmental conditions and their neighbouring agents' status. Thus communication could be considered in various ways, for example, a car sees another car close ahead, it may slow down; a tourist sees a direction sign, he/she may change their current heading. Human activities in urban environments are affected by the urban morphological structure (through the interaction between agents and environments) and by the status of neighbouring agents (through the interaction between agents).

SELF-ORGANISATION AND STARLOGO

There have been many efforts to provide a software platform for multi-agent simulation. Swarm (Minar et al. 1996¹⁶) is such a software platform, produced by Santa Fe Institute, for the simulation of complex adaptive systems. It is claimed to be a system that helps scientists focus on research rather than on tool building. In this respect, we believe that StarLogo (Resnick 1997¹⁷) is exactly the kind of tool for scientists. It is developed from Logo as a programming language for children (Papert 1980¹⁸).

SIMPED: SIMULATING PEDESTRIAN FLOWS IN A VIRTUAL URBAN ENVIRONMENT

The hypothesis tested is whether morphological structure has some impact on pedestrian movement in urban environments. To achieve this goal, a virtual urban environment with virtual humans is constructed using multi-agent simulation. Such virtual worlds offer many advantages (Resnick 1997¹⁹). In virtual worlds it is easy to create large number of virtual humans, it is easy to give new sensory capabilities to these virtual humans and it is easy to set up and control precise experimental conditions.

figure 1: a snapshot of simulation in progress

The simulation consists of two parts as shown in the figure. The right hand side graphic represents the virtual urban environment within which pedestrians are pictured as red. On the left hand side is the control panel. The set-up button creates the number of pedestrians walking in the urban environment. There are two continuous walk buttons namely walk-randomly, and walk-purposely. These two buttons set two different modes of the simulation. The former is random movement, while the latter is purposeful movement, which means pedestrians have set destinations to reach. In addition, a set of monitor tools is used to dynamically record pedestrians every moment in each street for analytical analysis. Behind what you see on the screen is a range of procedures which keep the simulation running.

¹⁶Minar N., Burkhart R., Langton C. and Askenazi M. (1996), The Swarm Simulation System: a toolkit for building multi-agent simulations, <http://www.santafe.edu/projects/swarm/>.

¹⁷Resnick M. (1994), *Turtles, Termites, and Traffic Jams: Explorations in Massively Parallel Microworlds*, The MIT Press: Cambridge.

¹⁸Papert S. (1980), *Mindstorms: Children, computers and Powerful Ideas*, New York: Basic Books.

¹⁹Resnick M, *ibid*

'TRAFFIC COP' A SIMPLE SIMULATION OF TRAFFIC INTERACTION

'Icons' representing motor vehicles are given a set of simple instructions to guide their reactive 'behaviour' to other icons and controls. The icons are launched along a carriageway at different speeds and then a control, a 'traffic cop' is located on-screen. The traffic icons slow down at an instructed rate, as they pass the cop, to a speed which is legal. The behaviour of the icons responds to both the traffic cop, the car/icon in front and the speed of the traffic flow.

SPEEDS IN MIXED-MODE TRAFFIC

We perceive the possible application of a development of these explorations in the context explained in the preamble, above. It seems plausible to have a range of icons which could have different behaviour instructions built-in. These behaviours might represent, say, a crossing pedestrian (causing traffic to slow down..), an unconfident cyclist (hugging the kerb), a loading vehicle (more or less carefully parked) and a string of other motor traffic which adjusts its behaviour to allow for the apparent available space in which a passing manoeuvre is 'allowed'.

A model of this type could be adjusted for road dimensions, modal mix and speeds to represent real places. Alterations could be made to the physical design which would allow different environment traffic management models to be assessed for their flow capacities. Since capacity is one of the key issues in any proposal to change the design of the road, especially those proposed to encourage walking, cycling or public transport, even on-street loading, a model as described could be important in 'tuning' speeds, adjusted by modelled physical traffic management measures, to maximise flows.

CONCLUSIONS AND FUTURE WORK

This paper discusses some results from experiments about pedestrian flows and pedestrian/vehicle/urban environment interactions using a virtual urban environment. The experiments conducted are useful to illustrate some human behaviours in urban environments. It has been shown that multi-agent simulation provides a valuable tool for urban environment simulation. Particularly in the experiments reported here, it has been found that urban morphological structures has striking impacts on pedestrian movement in urban environments, and that significant flows of traffic can be achieved in speed- managed streets. More work is required. Such simulations are useful for urban practitioners to assess draft urban plan proposals, and may also prove valuable for psychologists and geographers and urban designers to study human behaviour in urban environments. The simulation capability may be further incorporated into GIS (Geographical Information System) to be a new aspect for dynamic modelling. A successful and convincing model could make a major impact on both local and national government in terms of layout policy guidance.

THE ROLE OF CIVIL ASSOCIATIONS OF CYCLISTS IN SLOVENIJA

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ENGLISH

THE ROLE OF CIVIL ASSOCIATIONS OF CYCLISTS IN SLOVENIJA

The condition for beginning of a civil association is a democratic society regulation. The condition for the effective acting, especially of an association, which represents a "weaker" pole (in any sense), is a democratic and tolerant thinking in the society. The first condition is fulfilled in Slovenija, but the second is not. In such an environment, acting of a civil association of cyclists is often ineffective (or looks so). The civil group acts somewhere between the politics and the society, which in Slovenia lacks the ability of distinction (between good and bad) as it narrow-minded only recognizes brute force and does not ascribe some greater meaning to civil groups or expect any influence from them. In this way the truck driver associations, which in Slovenia fight for their "rights" at the moment, are far more successful although their goals have many negative impacts for the society as a whole. This is because the society reacts much more seriously on arguments of force (as for example road blockades) than on subtle arguments of civil groups, which mostly strive for the rights of the weak and for regulations good for the whole society, but which are somehow not persuasive enough in the raw capitalism. In our paper we would like to show the present and future role of the Maribor Cyclist's Network in Slovenija and the influence on the society and the politics. We believe that the state of similar civil groups in other countries "in transition" is comparable and that sharing the experience is of most importance. We see that countries with more advanced democracy had similar evolution of cycling, but there exist a number of differences, which have to be taken into account. These are exposed in the article as well in searching for a new starting point for effective future acting of civil groups to promote cycling in the "lands in transition".

WEDNESDAY

DEUTSCH

DIE ROLLE ZIVILRECHTLICHER RADFAHRERVEREINIGUNGEN IN SLOWENIEN

Die Voraussetzung für die Gründung einer zivilrechtlichen Vereinigung ist eine demokratische Gesellschaftsordnung. Die Voraussetzung für effizientes Handeln, insbesondere seitens einer Vereinigung, die den "schwächeren" Pol (in jedweder Hinsicht) vertritt, ist demokratisches und tolerantes Denken innerhalb der Gesellschaft. Die erste Voraussetzung existiert in Slowenien, nicht aber die zweite. In einer solchen Umgebung ist das Handeln einer Radfahrervereinigung oftmals nutzlos (oder erweckt zumindest diesen Anschein). Die Gruppe agiert irgendwo zwischen der Politik und der Gesellschaft, die in Slowenien nicht in der Lage ist, (zwischen gut und schlecht) zu unterscheiden, da sie engstirnig, wie sie ist, nur rohe Gewalt anerkennt und zivilrechtlichen Gruppen keinerlei größere Bedeutung zuschreibt und von ihnen keinerlei Einfluß erwartet. Deshalb sind die LKW-Fahrer-Verbände, die in Slowenien für ihre "Rechte" kämpfen, wesentlich erfolgreicher, obwohl ihre Zielsetzungen unter Umständen viele negative Auswirkungen für die Gesellschaft in ihrer Gesamtheit bedeuten. Dies liegt daran, daß die Gesellschaft mit wesentlich größerem Ernst auf Demonstrationen von Stärke (wie beispielsweise Straßenblockaden) reagiert, als auf die subtilen Argumente zivilrechtlicher Gruppierungen, die meist für die Rechte der Schwachen und für Bestimmungen zum Wohle der gesamten Gesellschaft kämpfen, die im kapitalistischen Klima jedoch irgendwie nicht überzeugend genug sind.

In unserem Referat möchten wir aufzeigen, wie die gegenwärtige und künftige Rolle des Radfahrernetzwerks von Maribor in Slowenien aussieht und welchen Einfluß es auf Gesellschaft und Politik ausüben wird. Wir glauben, daß der Status gleichartiger zivilrechtlicher Gruppierungen in anderen "Reformländern" ähnlich ist und daß es sehr wichtig wäre, hier Erfahrungen auszutauschen. Wir sehen, daß sich in Ländern mit einer weiter entwickelten Demokratie das Radfahren ähnlich entwickelt hat, doch besteht eine Reihe von Unterschieden, die zu berücksichtigen sind. Diese werden im Referat genannt, das auch nach einem neuen Ausgangspunkt für effizientes künftiges Handeln zivilrechtlicher Gruppierungen sucht, die das Radfahren in den "Reformländern" fördern möchten.

VLOGA CIVILNEGA ZDRUŽENJA KOLESARJEV V SLOVENIJI

Pogoj za nastanek civilne skupine je demokratična družbena ureditev. Pogoj za učinkovitost njenega delovanja, sploh kadar gre za skupino, ki zastopa "šibkejši" pol (v kakršnemkoli smislu) pa je demokratično in strpno razmišljanje družbe. Prvi pogoj v Sloveniji je izpolnjen, drugi pa v glavnem ne. V takšnem okolju je delovanje civilne skupine kolesarjev, ki zastopa "šibkejšo" udeleženco v cestnem prometu, včasih precej neučinkovito ali pa se kot takšno vsaj kaže. Civilna skupina deluje nekje med politiko in družbo, ki pa ji v Sloveniji manjka sposobnost razločevanja, saj kratkovidno priznava v glavnem le moč, civilnim skupinam pa ne pripisuje večjega pomena oz. od njih ne pričakuje pomembnejšega vpliva. Tako so npr. združenja avtoprevoznikov, ki se trenutno v Sloveniji zelo zavzemajo za svoje "pravice", veliko uspešnejša pri doseganju ciljev, pa čeprav imajo njihovi cilji za družbo negativne posledice. Toda družba pač veliko resneje reagira na argumente moči (npr. blokade cest), kot na subtilnejše argumente civilnih združenj, ki se večinoma zavzemajo za pravice šibkejših oz. za ureditev, ki bi bila dolgoročno koristnejša za celotno družbo, vendar v grobem kapitalizmu nekako niso dovolj prepričljivi.

Prispevek skuša prikazati trenutno in prihodnjo vlogo Mkm v Sloveniji ter njen vpliv na različne družbene skupine in politiko. Verjamemo, da je stanje podobnih civilnih skupin v drugih deželah "v prehodu" zelo podobno in da je zelo koristno te izkušnje izmenjevati. Opažamo, da je tudi v deželah z razvitejšo demokracijo razvoj kolesarjenja potekal podobno, vendar obstajajo nekatere bistvene razlike, ki onemogočajo neposredno uporabo izkušenj. Tudi te poizkušamo v prispevku osvetliti in podati izhodišča za učinkovito prihodnje delovanje civilnih skupin za promocijo kolesarjenja v "deželah na prehodu".

ROLE OF THE CIVIL CYCLISTS' ASSOCIATION IN SLOVENIA:**MARIBOR CYCLISTS' NETWORK - MARIBORSKA KOLESARSKA MREŽA CASE**

Although cycling has a long tradition in Slovenia, after the independence in 1991 new cars on our roads took their space and depleted cycling lanes. New cars desirous Slovenians have been spending huge amounts of money to buy new cars. Of course, bank loan policies clearly supported their desires. Today car shops are growing like mushrooms after the rain. Here and there some specialized cycling shop has been opened also, but mainly to cover trendy demand on mountain bikes.

Cycling in everyday life became more like emergency exit rather than normal, everyday mode of traveling. Image of cycling as human and environmentally friendly mobility mode steadily depleted.

How difficult task has been taken on our shoulders could be presented with following data. In the year 1998 Slovenians bought more than 67.000 new vehicles. In comparison with the year 1997 that represent almost 9 % increase. In the period between 1991 and 1996 the degree of motorisation increased significantly - from 297 to 365 cars per 1.000 inhabitants, or from 3,4 to 2,7 inhabitants per car. In 1997 that number already achieved 426 cars per 1.000 inhabitants. Today it is higher than in several western European countries. The predominant mode of passenger transport in Slovenia is the private car. More than three-quarters of all journeys in Slovenia are made by private car, and only one-quarter by public transport. If we are allowed to add, that Slovenia is building huge highway system (ca. 516 kilometers), allocating more than 5 billion \$ for it, instead of investing in public transport and rail system, than the overall picture is even tenebrous.

CIVIL CYCLISTS ASSOCIATION IN DECISION-MAKING PROCESSES: THE NEED AND PARTNERS

Four years ago, when we started with the independent and civil (in the meaning of independency and non-governmental approach) association of cyclists, in Slovenia there were almost no allies around, with exception of one smaller group in Ljubljana. With different activities, in the range of exhibitions, roundtables, workshops, newsletters and folders, we have tried to initiate similar networks in larger slovenian towns.

There is an explicit need for organized cyclists interest before we can start to play an equivalent role in decision- and policy-making processes on local or national level. Bicycle has to be presented in a new image. We are trying to achieve that also with publishing articles, press conferences and other different public appearances. We consider co-organizing Velocity '99 as a good opportunity and help for strengthening such a new image.

For one of our biggest success until today we consider the agreement with Slovenian rails on free transfer of cycles for our members and members of European Cyclist Federation (ECF).

We have also participated in the preparations and formulation of the new national traffic policy together with

parlamentarians. Respond and result at the end of the parliamentary debate didn't fulfilled our expectations. Slovenia became first European state with obligatory helmet for younger than 14 years.

We have also organized several direct protest actions. Labeling cars, parked on the cycling lanes, protest drivings, where there is no sufficient cycling infrastructure. Drawing cycling lane lines on the one of the main Maribor bridges has forced local administration to build up also cycling lane on it between reconstruction work on the bridge. Protest and direct actions are also form of work mostly appreciated by our members.

Successful lobbying in the local city council has brought to another success, that some public money has been allocated in the city budget for cycling. We are also participating in the process of development of the new city traffic policy. There are also several of our members represented in some city council committees.

But, even that some progress has been achieved, we are not satisfied with the celerity of changes, we would like to achieve and are needed according to the present traffic situation in Maribor.

We are now in the phase to professionalize our work.

WHAT REASONS BROUGHT US TO THIS DECISION?

If we would like to maintain good and qualitative work on changing traffic policies and traffic situation in the city, continued work is needed. Such a work can be achieved only with professional stuff. Traffic activities has to be tracked, own projects maintained (with bicycle on work and in school, publishing our own newsletter, ...). We have also started with activities to establish Cycling Center, that should establish needed environment to maintain our activities and to broaden them: rent-a-bike, safe-store, self-repairment facility and cycling tourist programme. We hope, that this goal will be achieved with our own activities and in some extent also with some help of the city of Maribor and other donors.

EXPERIENCES

For beginning some altruistic individuals are enough to start an initiative, having agreed on the scope and methods of their own work. Of course, it is much easier to have a "god-father", that is able to finance some of the activities, but that was not the case in our association, giving us more independency.

It is best to start with organizing good public events. It can be in the form of protest action or round-table, where citizens are invited. Next step is a formalization of the activities in the form of association.

The most important step represents the evaluation of the scope and methods of work in the association. Too academic approach has no necessary action dimension. Too many actions and protests are creating too many conflict situations with other participants in traffic. In the countries in transition, where car does not represent only a mean of mobility, but also a symbol of power and success, that's very important fact. We are also sometimes in position to take a car instead bus or bicycle.

Such approach has open to us many doors and has achieved recognition also by the media.

In preparations of our activities and evaluation of our demands we are well conscious of the fact, that is the same also in the European Union: political recognition of cycling has to be achieved. Only at that moment, when cycling comes on the agenda of politicians (local or national), we can hope on some influential changes on better.

FUTURE GOALS

We do not intend to drive "holy war" against other traffic participants. Our goal is to achieve public recognition of bicycle as best and most sustainable mean of transportation in the city. Therefore, real social and health costs has to be evaluated, economic incentives established, and burdens differentiated, that everybody will pay for what he or she is using. It is not win-lose strategy, it is a clear win-win strategy. Information gathering and dissemination therefore represents one of the most important tasks on our way to achieve our main goal.

- Professionalizing of our work
- Creating City Cycling Center
- Establishing national cycling network
- Equal and active partners in policy and decision making processes

BRAZIL'S SOCIAL STIGMA: CYCLING

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**BRAZIL'S SOCIAL STIGMA: CYCLING**

Brazil, an emerging 3rd world nation, has 40,000,000 bicycle users. It has all the necessary pre-requisites and qualifications for the perfect and classic social conflict between bicycle and car. In today's Brazilian society, the car is the desired object. The car industry is the savior for all economic and social ills and woes. The bicycle occupies the lowest position on the social scale. The cyclist rides against a wave of prejudice. Yet the country has advantages and the conditions to change the situation. The new traffic code includes the bicycle. The mountain bike and triathlon competitions have brought the bicycle back into the limelight and put it in a different perspective. The country's ecotourism potential is a perfect partner for ciclourism. But the stigma still remains - much change is needed.

ENGLISH

BRASILIENS SOZIALES STIGMA: RADFAHREN

Brasilien, eine aufsteigende Nation der 3. Welt, hat 40.000.000 Radfahrer. Es verfügt über alle erforderlichen Voraussetzungen und Qualifikationen für den perfekten und klassischen sozialen Konflikt zwischen Fahrrad und Auto. In der heutigen brasilianischen Gesellschaft ist das Auto das Objekt der Begierde. Die KFZ-Industrie ist der Retter, der alle wirtschaftlichen und sozialen Probleme beseitigen wird. Das Fahrrad hingegen findet sich auf der untersten Stufe der sozialen Hierarchie. Der Radfahrer fährt gegen eine Welle von Vorurteilen an. Dennoch hat das Land Vorteile und auch die Voraussetzungen, um die Situation zu ändern. Das neue Verkehrsgesetz berücksichtigt auch das Fahrrad. Das Mountainbike und Triathlonbewerbe haben das Fahrrad zurück ins Rampenlicht gebracht und lassen es jetzt aus einer anderen Perspektive erscheinen. Das Potential des Landes in puncto Ökotourismus ist für den Fahrradtourismus der perfekte Partner. Doch das Stigma bleibt - und wir müssen noch viel ändern.

DEUTSCH

BRAZILSKA SOCIALNA SRAMOTA : KOLESARJENJE

Brazilija, nastajajoča tretja svetovna nacija, ima 40.000.000 kolesarjev. Ima vse v naprej potrebne pogoje in kvalifikacije za popoln in vzoren socialni konflikt kolesa in avta. V današnji brazilske družbi je namreč avto zaželen predmet. Avtomobilska industrija je rešiteljica vseh ekonomskih in socialnih bolezni ter stisk. Kolo zavzema najnižji položaj na socialni lestvici. Kolesar se sooča z valom predsodkov. Država ima prednosti in pogoje za spremembo nastale situacije. Novi prometni predpis vključuje tudi kolo. Gorsko kolo in tekmovanja v triatlonu so postavila kolo nazaj v središče zanimanja, v drugačno perspektivo. Deželni ekoturistični potencial je odličen partner kolesarskemu turizmu. A sramota še ostaja - potrebno je torej še več sprememb.

SLOVENSKO

BRAZIL'S SOCIAL STIGMA: CYCLING

Brazil is a third world country. An emerging 3rd world nation if you will. And as such suffers from all the ills and diseases that go along with that label. The bicycle, which should by any standard of reasoning, have a defined and important role in the development and betterment of the nation and its citizens, is nothing more than a discriminated, underrated and ignored vehicle.

The country today has a total population of over 157,000,000. Of that number only about 12 % earn a salary above US 1,000.00 per month. With heavy exodus from the country's rural areas, the country's big cities face chaotic and uncontrolled growth and decaying living conditions. The city of São Paulo alone has a population of 10.5 million in an area of 1,509 km² (greater São Paulo has a population of 20,000,000, sprawled out over an area of 8,051 km² encompassing 28 municipalities).

The bicycle, therefore, could be the solution to many of Brazil's social problem with the proper incentives. Yet, due to the country's development, a great part taken place under the shadow of US influence, the bicycle has yet to claim any sort of dignity or respect. In fact, it occupies the lowest position in the food chain of our motorized society in Brazil.

The Brazilian bicycle's historical demise was no different than that of its US counterpart. It was bullied out of the mainstream by motorized vehicles -- the only difference being that in Brazil, the bicycle has yet to find its niche. Brazilian social development has always been heavily influenced by its capitalistic ally, the US. Brazil is one of Uncle Sam's major trading partners. Brazilian tourists outrank all others in visits to the US (mainly Orlando and New York). So it comes as no surprise that the car (or any other individualized motorized transport, for that matter), eventually became an object of desire to the population as a whole.

Today, the automobile industry is seen as the solution to many of the nations economic woes and problems. In 1998, alone, saw a booming interest in the car manufacturers to install production units in the country rather than export. Such industries as Chrysler and Toyota, to name a few, installed state-of-the-art factories in the country. They received privileges and incentives such as years of tax exemption from both the state and national government. In January of 1999, Mercedes Benz inaugurated its new production facility. Those traditional companies which had been in Brazil for many years, Chevrolet, Fiat, Ford, GM and Volkswagen started to upgrade themselves in order to offer the latest models that were always several years away from the Brazilian market.

The industry has also gone to great lengths to provide a "low cost motorized" object of desire for the less fortunate classes. The "popular" car, as it is referred to in Brazil, is a small simple yet, economic car with a small 1.0 engine and with no "extras". It was developed to be accessible to a wider range of the population, being offered at considerably lower price ranges than other larger cars. Long term payment plans (up to three years) lure glaze-eyed customers to car dealers. No wonder that in the city of São Paulo there is one car for every 2.6 inhabitants. 25% of the country's car fleet is concentrated in São Paulo.

The car industry pours millions of dollars in propaganda and marketing. The media bombards the market selling the image of the car and trying to entice us into buying the dream of a lifetime -- a car. Brazilian society has now been convinced that, as *The Economist Magazine* so aptly put it, "the car is not just an aspect of modernity, it is a precondition for it." This type of thinking, unfortunately, has permeated all levels of Brazilian society, from the minimum salary wage earner (US 130.00 per month in January 1999) to high political figures who have, off the record, said that they would rather give a car to everyone than a bicycle!

The car was invented in order to provide fast, cheap and easy personal transportation. It was to expand man's limitations. It was to broaden his horizons. It became posh to, if not own a car, want one. It was easier travel by car. You could cover greater distances in greater comfort and in a lot less time. You could take the entire family, as well as, a lot more luggage. You could do more in less time.

It can be argued that in many parts of the country there are indeed a great many who do use the bicycle as their principal mode of transportation, however, few by choice, most because they have to. Ask any one of them if they would change their bicycle for a car and you will invariably get an enthusiastic and resounding "yes", no matter how poor, under educated or under privileged.

Purchasing power drops considerably in the interior and rural areas, although the cost of living in general is lower in these areas. Car prices on the other hand either stay the same or are more expensive due to shipping costs. Thus, unless one earns more than just enough to make ends meet and survive, one has little choice but to use other means of transportation.

This translates into mass transit system or bicycles. Yet, examples abound of people earning a minimum salary and having to take 2 or 3 different buses to get to work and 2 or 3 buses back home. Considering the price of a bus fare in the city of São Paulo which is more or less US 1.00 that means a daily cost of US 4.00 or US 80.00 per month! When you consider a minimum salary of US 120.00, transportation costs represent a considerable percentage of the wage earners salary. And yet there is an open and defiant refusal to use the bicycle.

Urban planning has all but ignored the bicycle as a means of sustainable or alternative transport much less the rights

of those citizens who choose the bicycle as their means of transportation or leisure. In São Paulo, for example, the 26.4 km of bike paths are located mostly in public parks. The few that are not take you from nowhere to nowhere! Urban planners and traffic planners have forgotten to leave space for human powered vehicles on streets and avenues.

In Rio de Janeiro there is a bike path network of 74 km with an infra structure that includes 500 bike parking facilities and 800 bike traffic signs. However, Brazil's main cities, with the exception of one or two, grow at exponential rates with no regard whatsoever to planning or control. The standard of living if measured by their traffic conditions cannot get much lower.

São Paulo is already ahead of New York and Tokyo in terms of cars per inhabitants. While Tokyo has 438 vehicles per thousand inhabitants, Paris 322 and New York 259, São Paulo has 469! There are 4.6 million vehicles in a city of 10,500,000 inhabitants. In Rio de Janeiro the situation is not much different, although the city has an estimated 1.5 million vehicles. In São Paulo 75% of the most common routes take an average of 2 hours. 35% of this time is wasted at stoplights (there are 4,700 traffic lights in the city's 14,000 kilometers of streets of which 10,500 are paved). All this is capable of provoking 96 kilometers of traffic jams and average speeds of 11 km/hour on major arteries such as Paulista Avenue (which means 48,000 stopped cars). The average motorist spends the equivalent of four days per year stopped at red lights. It takes more time to leave the city on a short weekend trip than does the actual trip. Roads and streets are saturated beyond any reasonable or possible control.

Subways and bus lines are usually an alternative but in a city the size of São Paulo there is a direct need for at least an additional 400 km of subway lines. The São Paulo subway is one of the most crowded on earth, even though it has only 44 km of lines (Tokyo has 230, Paris 200, Mexico City 158, London 394 and New York, 443).

The São Paulo streets house 12,000 buses distributed among 808 lines at an average speed of 14 km/hour. Each day they carry 9 passengers per square meter and travel over 2,000,000 km a day with an accident every 45 km! For Rio de Janeiro's 6 million bus users, the situation is no less critical. A typical 20 to 30 km bus commuting trip may take up to 2 hours!

Yet, the bicycle remains awesomely unnoticed and sadly under used. It cannot be argued that the bicycle is a new comer to the scene, either. In fact, it has been around since the end of the last decade. In the city of Porto Alegre in the southern state of Rio Grande do Sul, for example, as early as 1895 the bicycle was a fad. Several bicycle clubs and groups were formed to promote bicycle outings and competitions.

In 1900, the same state held its first State Cycling Championship. Soon, mainly factory workers of European descent were using the bicycle as a means of transportation. With a large "poor" middle class, and car production not fully established, the bicycle slowly became an excellent means of transportation.

Bicycle manufacturing on an industrial scale got its start in the 1930's. In 1975, the industry started to experience its golden age. In that year 1.1 million bicycles were produced and this figure continued to grow to 2.3 million in 1992. It is estimated that the bicycle fleet in Brazil today is around 40 million bicycles. In comparison, the car fleet is calculated close to 20 million vehicles.

But where are all those bicycles, one may ask? Certainly not in the streets. A large part of the population regards the bicycle as a socially unacceptable means of transportation. Few are the people who use the bicycle for their transportation by choice. Most are economically blackmailed to use the bicycle as a vehicle of preferred transportation. Others are "once-a-month" users for short rides in the park or the like.

The lack of infrastructure to support and promote bicycle usage is also a perennial problem. The car dominates our society and as a result the bicycle is socially discriminated against as an unwanted intruder. Try to use your bicycle as an instrument to get to places and discrimination stares an ice-cold disregard to the cyclist. There are no places to park. Parking lots are off limits to cyclists (they claim that their insurance policy does not cover bicycles). In many places, a simple, "it is just not allowed" is a justifiable answer.

Yet, exceptions can be found. There are a few souls who defy deplorable riding conditions, chaotic traffic situations and social ridicule to use the bicycle as a fast, quick, cheap and reliable means of transport.

For many years the bicycle was associated with the less privileged blue-collar working class. In Brazil it is "baiano" to use a bicycle for anything but leisure or competition (the term "baiano" comes from the north eastern state of Bahia, many of its inhabitants migrate to the big cities looking for better work opportunities and is a derogatory way of meaning "not kosher" or socially unacceptable). If one visits the ABC area of São Paulo (highly industrialized regions of the city), factories have huge bicycle parking facilities of 100 to 200 or more bicycles. Do not be illuded; none belong to managers and almost all are used for the

reasons mentioned before.

Many athletes who take up cycling as amateur or professional road racers or mountain bikers come from poor or humble backgrounds, which adds to the social stigma. Cycling does not even get anywhere close to the amount of media exposure that Brazilian basketball or volleyball get (not to mention the various modalities of soccer!).

Fathers' promise a car for their children's 18th birthday or as a reward for graduating. To own a car, has not only become part of the dream, but a part of your life. You are a nobody until you have your own car. It is almost an initiation rite into the mainstream of society.

Tell people that you do not own a car or use the bicycle as your only means of transportation and they call you "crazy". You are anything but normal. People look at you as eccentric and not "fitting in" to what most consider normal. Commute to work and you are discriminated against by the cleaning personnel of the office, since you can afford a car but do not have one and would rather ride a bike. At the same time, you are discriminated against by your peers and co-workers at the office because your social position demands that you have a car and not a bicycle (and I speak from personal experience!).

The irony of all this is that Brazil not only has the advantages to change this situation but the conditions to do it as well. The weather is highly cooperative. There is no harsh winter (read no snow) and the sun shines year round. The geography is highly cooperative. Most of the country is basically flat with no high mountain ranges as in other parts of the world. There are 8,000 km of coast lined with paradisiacal beaches. The environment is cooperative. Brazil has a variety of different ecosystems and diverse geographic settings perfect for either mountain biking or touring. Due to its continental size there is just about everything one could ask for or want in terms of geographical and biological diversity.

An important step to help the folks who do cycle and open the way for those who would like to was taken when the new Brazilian Traffic Code became law, January of 1998. For the first time, the bicycle was officially recognized as a vehicle and as such had the right to transit on any street, avenue or road in the country, and with the right of way over all motorized vehicles. The traffic code devoted several articles exclusively to bicycles (and human powered vehicles). At least now, before the law the bicycle is no longer ignored and discriminated against.

Cities such as Curitiba and Rio de Janeiro are attempting to integrate the bicycle into their traffic systems. There are 3 million bicycles in Rio de Janeiro, of which 80,000 are calculated as transiting along its bike path network. By the year 2000 Rio hopes to have a total 140 km of bike paths.

The mountain bike phenomena and the removal of import restrictions has also pushed the bicycle into a different perspective. From 1976 to 1991 there was a complete restriction on bicycle imports. One company dominated the market. With lifting of the import restrictions, the market had access to the latest models. With the advent of a new environmental consciousness, people have begun to want to preserve their natural environment. They want to take part in eco-tourism and eco-adventure, and have started using the mountain bike as a means of doing this with minimum impact.

Then, of course, there is the fitness craze, which has also helped in reducing the stigma of the bicycle. People see and use the bicycle as a means of getting into shape. Doctors "push" the bicycle as the aerobic activity, which stresses the body less than any other sport (except maybe swimming). Hardly an issue goes by without the bicycle appearing as an excellent conditioning option in popular women's health magazines and fitness magazines.

What perhaps has been the most influential catalyst in changing the social stigma of cycling, however, has been the tremendous popularity and growth of triathlon. The bicycle, through this sport has managed to permeate, albeit slowly, into the upper class -- the class of the well off, of the opinion makers, those who dictate trends, fashion and behavior.

With their shiny imported state-of-the-art bicycles, these athletes have made the bicycle become an object of desire once more. It is difficult to ignore or want a US 5,000.00 titanium bicycle with carbon fiber fork and ultra-light aerodynamic wheels. These bikes can and do cost more than a small motorcycle.

Several national triathletes have gained international recognition and reputations, which in turn, has reflected in large multi-national corporate sponsors and much media coverage and exposure. They have become idols and models and serve as examples to be followed. The bicycle has taken advantage of this opportunity. Most of these athletes excel in the cycling stage of their sport and the bicycle has literally hitched a ride on this wave of popularity and exposure.

This slow change in attitude can be seen in other areas where it would have been unheard of the bicycle infiltrating before. Some car dealers and motorcycle manufacturers have used the bicycle's new appeal of desire in their marketing strategies. Audi's car dealer (Senna Imports) offers an expensive tailor made bicycle called Ayrton Senna (after the famous Brazilian Formula 1 racing driver) its customers (or anyone else willing to pay US 5,000.00). Harley Davidson has lent its legendary name to GT, which has imported the motorcycle styled bicycle to Brazil (it actually looks like a Harley).

So, this change in attitude towards the bicycle is indeed taking place. It may be small, slow and subtle, but a change nonetheless. Once the social stigma of riding a bicycle has been eradicated the way will be open to take full advantage of its qualities as a means of transportation. No matter how much we argue that people do not use the bicycle because of traffic conditions, lack of infra-structure, safety or whatever, so long as the social stigma remains no amount of

AFRICAN CYCLISTS FEDERATION: OPTION FOR SUSTAINABLE TRANSPORT CULTURES

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AFRICAN CYCLISTS FEDERATION: OPTION FOR SUSTAINABLE TRANSPORT CULTURES

The report shall focus on the urgent need for African countries to establish African Cyclists Federation (ACF) a Bicycle crossing Frontiers linking sub Saharan African (SSA) countries of West African, Central Africa, East Africa and Southern Africa. Africa, is well known all over the world because of its rich cultural values and its under-development. The continent, despite its poverty is generally friendly to and interested in meeting and welcoming foreigners. This is evidenced in Europeans' and Americans' interests in taking constant cross-cultural bicycle tours of countries of Uganda; Botswana Tanzania; Malawi; Zimbabwe; Ethiopia; Mali; Ghana; Cameroon to mention but a few.

In spite of the fact that there are little or no well planned and constructed bicycle routes in Africa, like as it is in Europe and America, foreigners still enjoy bicycling in Africa because of its good natural climatic condition.

- The Heads of Governments of sub Sahara African countries by this report are called upon to formulate Bicycle and bicycling Policies that will enhance and facilitate cycling in the continent to sustain bicycle transport cultures. Improve feeder roads and bicycle routes would have a beneficial effect in cycling in Africa and load-carrying capacity of bicycle. African Cyclists Federation (ACF) should prepare guidelines on the promotion of intermediate means of Transport (IMT) in Africa. Other areas of concern to the ACF and the Heads of Government of Africa should be:

- rural transport planning
- institutional and financial arrangement for rural transport infrastructure
- acquisition of bicycle through credit facility arrangement to enable low income earners purchase bicycle and
- the expansion of labour-based work methods in rural road programmes.

DEUTSCH DER AFRIKANISCHE RADFAHRERVERBAND: EINE MÖGLICHKEIT FÜR EINE NACHHALTIGE VERKEHRSKULTUR

Das Referat wird sich auf die dringende Notwendigkeit der afrikanischen Länder konzentrieren, einen afrikanischen Radfahrerverband zu gründen, d.h. eine grenzüberschreitende Fahrradinitiative, die das subsaharische Afrika, Westafrika, Zentralafrika, Ostafrika und Südafrika verbindet. Afrika ist auf der ganzen Welt für seine reiche Kultur und seine Unterentwicklung bekannt. Der Kontinent ist im allgemeinen trotz seiner Armut Fremden gegenüber freundlich und freut sich, sie zu treffen und willkommen zu heißen. Davon zeugt das Interesse von Europäern und Amerikanern, immer wieder kulturüberschreitende Radtouren durch Uganda, Botswana, Tansania, Malawi, Simbabwe, Äthiopien, Mali, Ghana oder Kamerun zu unternehmen, um nur einige zu nennen.

Trotz der Tatsache, daß es in Afrika im Gegensatz zu Europa und Amerika nur wenige oder gar keine geplanten und angelegten Fahrradrouten gibt, kommen Ausländer immer noch gern zum Radfahren nach Afrika, da wir gute natürliche klimatische Bedingungen haben.

Die Regierungschefs der subsaharischen afrikanischen Länder werden hiermit aufgefordert, eine Fahrradpolitik zu formulieren, die das Radfahren auf dem Kontinent fördern und erleichtern wird, um die Kultur des Fahrradverkehrs zu erhalten. Eine Verbesserung von Zufahrtsstraßen und Radrouten würde sich auf das Radfahren in Afrika und auf die Belastungskapazität der Fahrräder positiv auswirken.

Der afrikanische Radfahrerverband sollte Richtlinien über die Förderung von zwischengeschalteten Verkehrsmitteln in Afrika ausarbeiten. Andere Bereiche, mit denen sich der afrikanische Radfahrerverband und die Regierungschefs Afrikas befassen sollten, sind

- Verkehrsplanung für ländliche Gebiete
- Institutionelle und finanzielle Vorkehrungen für eine Verkehrsstruktur in ländlichen Bereichen
- Möglichkeit zum Ankauf von Fahrrädern über Darlehen, so daß sich auch Personen mit geringerem Einkommen ein Fahrrad leisten können
- Erweiterung der auf dem Faktor Arbeit beruhenden Arbeitsmethoden in ländlichen Straßenbauprogrammen

SLOVENSKO "AFRIŠKA KOLESARSKA FEDERACIJA": MOŽNOST PRENEŠENEGA TRANSPORTA VEČIM KULTURAM

Članek se osredotoča na nujno potrebo afriških držav k ustanovitvi Afriške kolesarske zveze (ACF), ki bi prečkala meje in povezovala Sub-saharske afriške države z Zahodno afriškimi, Centralno afriškimi, Vzhodno afriškimi in Južno afriškimi državami. Afrika je s svojimi bogatimi kulturnimi vrednostmi in s svojo nerazvitostjo zelo znana po celem svetu.

Kontinent je kljub revščini prijazen do tujcev in se rad s tujci srečuje. To je opazno tudi pri interesih Evropejcev in Američanov, ki imajo konstantne meddržavne kolesarske etape po državah kot so Uganda, Botswana, Tanzanija, Malavi, Zimbabve, Etiopija, Mali, Gana, Kamerun, če jih omenimo samo nekaj.

Kjub dejstvu, da je v Afriki bolj malo ali skoraj nič zadovoljivo načrtovanih in narejenih kolesarskih poti, kot je to v Evropi in Ameriki, tujci še vedno uživajo v kolesarjenju po Afriki, saj ima le-ta dobre naravno-klimatske pogoje.

S tem člankom se obenem obračamo na vladne poglavarje Sub-saharskih afriških držav, da le-ti oblikujejo kolesarsko politiko, ki bo zvišala in pospešila kolesarjenje na kontinentu ter tako podprla medkulturno in mednacionalno kolesarjenje. Tudi izboljšava stranskih cest in kolesarskih poti bi imela koristen vpliv na kolesarjenje po Afriki in na tovarno kapaciteto kolesa.

Afriška kolesarska zveza (ACF) bi morala pripraviti razvojne smernice za poživitev vmesnih transportnih sredstev (IMT) v Afriki. Ostala interesna področja ACF-ja in afriških voditeljev bi naj bila:

- ruralno transportno planiranje,
- institucionalna in finančna priprava za ruralno transportno infrastrukturo,
- pridobitev kolesarjev skozi kreditne olajšave in tako omogočanje slabše plačanim delavcem nakup kolesa,
- rast delovnih metod pri vaških cestnih programih.

LACK OF TRANSPORT POLICY

1. INTRODUCTION

It is necessary to examine the policies and procedures the Heads of Governments of the sub-Sahara African (SSA) countries and other Agencies can use to encourage bicycle transportation in the region, since bicycle is playing a very important role in the total economy of the continent, such as:

- i. riding to school or to farm lands
- ii. riding to keep fit and
- iii. for haulage

1.2. A growing body of case studies from various parts of the developing world demonstrate that the bicycle can and does play a significant economic role in resource environments of SSA. In the face of numerous, largely unpublished reports of local level demand for bicycles, it seems legitimate to enquire about the policy stand taken toward them by governments. Have governments shown awareness of the bicycle's economic utility under the present economic conditions as well as its special potential as a mode of transport benefiting the poorer strata of society in both urban and rural areas? If not actually discriminated against in a variety of ways. For instance the survey in Uganda found an ownership level of 30% in an area near to good roads, but in another more remote and hilly area in the same district accessible only by rough walking tracks, there were no bicycles. The high ownership in Burkina Faso is linked with the greater availability of credit to rural households and the fact that bicycles and spare parts are far more readily available than in other districts.

1.3. In many Urban areas of the SSA, the fear of unsafe travel conditions arising from lack of separate bicycle routes; negative attitudes towards cycling for fear of accidents, is a signal to governments to come out and make a policy concerning bicycle routes in Africa. John Howe (1994) confirmed lack of transport policy in SSA when he stated that in urban areas worsening safety conditions for cyclist were additional cause of the decline in their use. Special routes and junction facilities for cyclists are in almost unheard of in African cities, and with increased motor traffic cycling becomes so dangerous that many owners of bicycles abandoned the mode for commuting purposes. "Like in Nigeria cities and other more developed cities (MDC) where used cars and motor-cycle from Europe flood-in the market, there is the great propensity for the middle and high classes to go on motor vehicles and motor-cycles, and since there is no planned separate cycle route in these cities you scarcely see cyclists riding in the cities for fear of accident, expect those that have strong minds to use same congested roads with vehicles. Wherever there is any National or International cycling competition in the country, government uses the services of police men to control the flow of traffic in the city.

1.4 In much of rural Africa, foot is the dominant travel mode. Roads are not maintained, bridges non-existent and motor transport costs are high if available. Transport barriers restrict development in many ways; limiting food productions, the quality and variety of available food, access to health care, materials inputs to other industries and education. It is disheartening to note that SSA experience with bicycles is limited to old, heavy, single speed, or those of poor quality and poor repair

1.5 Since several researches have shown that there are little or no government policy guiding Intermediate means of transport (IMT) in the SSA. There is therefore need for Heads of Governments of the SSA to formulate policy guide-line to enhance Intermediate Means of Transport in Africa. Such policy will enable sub regions to plan and open separate bicycle routes to link one region to another and plan bicycle path-ways in the cities and rural areas of their respective countries.

THE ROLE OF AFRICAN CYCLIST FEDERATION

2.1 The Africa Cyclists Federation is expected to be the Apex of the cycling associations and clubs in Africa. Its role should be that of a leader and a coordinator of all the cycling events in Africa. The ACF should be a contact point with all other International bodies such as American Cyclists Federation ACF and European Cyclists Federation ECF etc. The African Cyclists Federation will host, Organise, and co-sponsor any African cycling competition or Conference as well as National conference and International cycling tours or competition.

2.2. A.C.F. is also expected to play the role of adviser to the Heads of Government when they will be formulating policy on IMT in the continent, and assist in the preparation of guide-line for the promotion of bicycles in Africa. Other areas for which ACF is also expected to play a leading role are:

- i. rural transport planning, all the researches in bicycle systems in Africa accepts that rural areas have no bicycle routes except

- foot-pathways which are so narrow and may not be adequate for cycling.
- ii to provide a guideline for institutional and financial arrangement for rural transport, haulage infrastructure, and also to the cities.
- iii to assist in acquisition of bicycle through credit facility arrangement to enable low income earners purchase bicycle, and
- iv to take interest in the expansion of labour-based work methods in rural programmes. Expansion of rural infrastructure will no doubt contribute to the economic development of a country in particular and Africa as a whole

2.3. African Cyclists Federation should be the source for information collection and dissemination concerning IMT and most especially cycling and cycle issued in Africa and Overseas. ACF will educate Heads of Governments on issue relating to IMT.

RURAL AND URBAN CONSTRAINTS

3.1. Only when African farmers are enabled to take control of their own bicycles, technical part of it such as manufacture and repairs, that the responsibility actually happen. Africans do not have or have little access to credit facilities to purchase bicycle, there are little or no standard work-shops, both workshop and trainings are by the road-side and in a local form

3.2 The condition of the roads in the rural areas over which the bicycle is ridden influences the distance and the size of load that can be carried. In the case of urban cities where there are no separate routes for cyclists. The cyclist is exposed to the danger of other road users such as vehicles, Motor-cycle, wheelbarrows, handcarts, including domestic animals. one can easily see the problems of cyclists. The way to encourage the greater use of bicycles in SSA is by improving the feeder roads and foot-paths, making out a separate bicycle routes particularly in the urban areas.

3.3 In the urban areas there are little or no bicycle parking space, lack of parking space causes people not to travel with their bike. The faster the Governments address these issues the better for cycling in Africa. Government policy on bicycle should be in line with what is obtained in America, Europe, Asia and other continents.

3.4 In majority of the African countries, due to their poverty, bicycle are seldom used for Agricultural transport. The cost of a bicycle remains too high for many people to afford. Those countries that have not established their own bicycle manufacturing industry and have shortage of foreign exchange for imports had a dramatic effect on bicycle acquisition, price are high. Not surprisingly, spare parts are also expensive. Even in some African countries such as Nigeria, Tanzania, and Zimbabwe etc., that have established bicycle manufacturing industries in their countries have not yet met the demand for bicycle in their respective countries.

STRATEGY FOR IMPLEMENTING THE USE OF BICYCLE FOR RURAL AGRICULTURAL PRODUCTIONS

4.1. For bicycle to play its important role in the rural agriculture economy, three important factors must be taken into consideration:

1. Credit scheme for Bicycle purchases
2. Technical support
3. Local manufacture of bicycle.

Under credit scheme, there is need for such scheme to be made available for rural farmers and transporters to facilitate the ownership of bicycle. Given the market price for both locally produced and imported bicycles to-day, selling at a very high price respectively, most rural dwellers and even some working class in urban cities cannot afford such high amount at a time, but if some kind of revolving loan is introduced throughout SSA it would then be possible for these poor farmers, transporters and working class to afford bicycles, with hope of paying by piece meal or instalment. At the completion of the cost of the bicycle say a year or two the bicycle automatically becomes the person's own.

4.2. In the area of bicycle credit purchases the governments are expected through their local government areas to play a leading role since the administrators of these areas are nearer to the beneficiaries of this scheme, and could be able

to identify their credit worthiness and genuine farmers.

4.3. The most important aspect of the scheme is its continuity. Beneficiaries must be capable of refunding the loan within a year or two to enable the government or organisation advancing the credit to be able to purchase more bicycles for other potential applicants. In addition to the above, the unique characteristics of the intended bicycle credit purchases for rural transportation were recognised. Most intended participants have known no other "world" apart from the "world" of subsistence economy, rural transportation. Their lives have been totally dependent on subsistence economy. Project plan such as credit bicycle purchases will assist them in realising their farming and transport potentialities and their total rural life will improve

4.4 With the above in mind and to ensure that the Project realises its objectives it is suggested that a three pronged strategy involving working through natives be adopted as follows

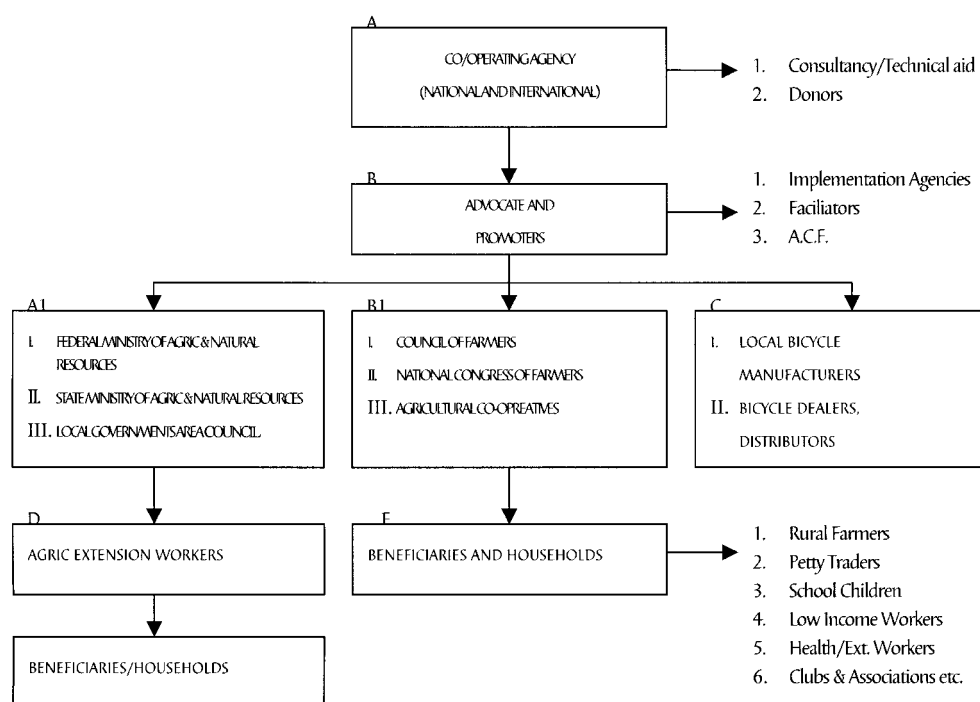
- i. Federal ministry of Agriculture & Natural Resources; State Ministry of Agriculture & Natural Resources and Local government Area Councils.
 - ii. Council of Farmers and National Congress of Farmers in all the SSA
 - iii. Local Bicycle Manufacturers and Bicycle Dealers/Distributors.
- (See Table I).

INTERPRETATION OF TABLE I.

4.5 Block A are co-operating agencies, they are International and National donors, facilitators, they are philanthropists, bicycle manufacturers who are willing to donate used and unused bicycles, money and any other valuable assistance to the African countries in need.

Block B are advocates and promoters, whose duties are to bring awareness of the needs in these countries, they are to assist

SCHEDULE FOR CREDIT SCHEME FOR BICYCLE PURCHASE IN ISSA COUNTRIES



governments in formulating bicycle and bicycle routes policies. They are to ensure that scheme for credit for bicycle purchases are carried out in SSA, if possible they can raise funds and finance the credit purchases. Together with the government policy planners, advocates and promoters, they are to make master plan for bicycle pathways leading to a full-fledged network of bicycle routes in the urban cities of African countries and inter-connections within each of the frontiers linking West African, another bicycle routes linking Central Africa, another linking East Africa and the last but not the least, bicycle routes linking Southern African States.

Policy on cycle route network will improve the government process and a symbol of sustainable transport in the SSA. Block A1 is to give full support to the scheme, they are expected also to contribute financially and materially to the scheme, whereas Block

B 1 are expected to give the Advocators/promoters maximum co-operation for the success of the scheme. Block C like Block A are contributors to the scheme. they may contribute used and unused bicycles to the rural farmers. Block D are to give farming advisory services to the farmers. they are to provide farm demonstrations and farming techniques. whereas Block E are the beneficiaries of the scheme.

TECHNICAL SUPPORT

4.6. There is need for Technical support to bicycle acquisition and ownership in SSA if it is to play the expected leading role as a means for rural agricultural production and haulage. It is therefore, important that bicycle supply and services be established in each of the Headquarters of the local Government in the SSA. Lack and or high cost of spare parts and repair services are some of the constraints on the ownership and usage of Bicycles. It is therefore necessary for the governments organisations and International donors assist the rural dwellers by training some of the indigenes as bicycle mechanics and in the making of basic spare parts - tyres, tubes, spokes, pedals, carriers etc. Standard repair services and workshops facilities are non or less available in the majority of the villages of the African countries

LOCAL MANUFACTURE OF BICYCLES

4.7 If the bicycle transportation is to be more effective the present local bicycle manufacturing industries should be strengthened. It is even recommended that each country should have about two or three bicycle industries to meet the demand for bicycle throughout the African countries. Effective production of local bicycles will reduce dependence on imported bicycles and high cost of importation associated with it.

THE GOAL OF BICYCLE FOR AGRICULTURAL VENTURES AND CONCLUSION

5.1. The goal of the bicycle for Agricultural Ventures (BAV) is to facilitate the people of SSA to experience the potential of mountain bikes to improve the well-being of all Africans. Mourriain bikes has the potential to revolutionise rural transportation, providing a light weight, heavy-duty bicycles well suited to carrying people and goods over rough roads and cycling to and from their farm-lands. The bicycle for Agric. Ventures is facilitating this by recommending various assistance to the poor African countries. Such assistance to SSA could be by donating used and unused bicycles, or loans from International development agencies. For example in Ghana, David de Leyser (1992) stated that "the most important was the world Bank RIC2 credit which provided US\$500,000 to import about 8,500 bicycles for sale to the general public. The contract for supply of bicycles was awarded to an Indian manufacturer. Import licence were also issued to 8 local companies that would assemble the bicycles as completely knocked Down (CKD) kits and assembly and market them".

5.2. There is therefore, the need for more support from other International development agencies to meet the demand for bicycle by African nations.

5.3. The development of rural infrastructure, both physical and social, is crucial for rural development. Eiicycle transportation in rural areas is stimulated by access roads and bicycle routes, where there are no such good access roads and routes bicycle riding and load haulage becomes very difficult, farmers in these areas usually fetch their farm-tools and crops on their heads or back as the case with the Bwari community and wa(k the lorig distance to and fiom their farms

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TEN SUCCESSFUL YEARS FOR BRITAIN'S BEST CYCLING CITY.

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TEN SUCCESSFUL YEARS FOR BRITAIN'S BEST CYCLING CITY

The city of York adopted its Cycle Strategy in 1988. Since then it has been voted Britain's No. 1 cycling city. The paper describes the progress from the early days to the present putting it into the context of rapidly changing national policy. The role of the Cycle Strategy is discussed and the paper is illustrated with slides of the best facilities.

The paper concludes by outlining the success of the strategy so far and considering ways to take things forward for the next ten years. This section takes account of the greater national emphasis on cycling which allows more scope for radical and innovative design.

ENGLISH

ZEHN ERFOLGREICHE JAHRE FÜR DIE BESTE FAHRRADSTADT GROSSBRITANNIENS

Die Stadt York verabschiedete ihre Fahrradstrategie im Jahr 1988. Seit damals wurde sie zur Fahrradstadt Nr. 1 in Großbritannien gewählt. Das Referat beschreibt den Fortschritt von den ersten Tagen bis zur gegenwärtigen Platzierung im Kontext der sich rasch wandelnden nationalen Politik. Die Rolle der Fahrradstrategie wird behandelt, und zur Veranschaulichung des Referats werden Diaaufnahmen der besten Einrichtungen gezeigt.

Das Referat schließt mit einer kurzen Beschreibung des Erfolgs, den die Strategie bisher erzielt hat, und erwägt Möglichkeiten, in den nächsten zehn Jahren weitere Fortschritte zu erzielen. Dieser Abschnitt berücksichtigt die verstärkte Betonung des Fahrradverkehrs auf nationaler Ebene, die einen größeren Raum für radikale und innovative Planung bietet.

DEUTSCH

DESET USPEŠNIH LET BRITANSKEGA NAJBOLJŠEGA KOLESARKEGA MESTA

Mesto York je določilo svojo Kolesarsko strategijo leta 1988. Od tedaj je bilo izbrano za Britansko kolesarsko mesto številka 1. Prispevek opisuje napredek od zgodnjih dni do danes, tudi z ozirom na hitre spremembe nacionalne politike. Opisana je vloga Kolesarske strategije, prispevek pa je ilustriran tudi s slikami najbolj izstopajočih rešitev.

Članek na koncu prikaže dosednji uspeh strategije in ocenjuje možnosti razvoja v naslednjih desetih letih. Ta del upošteva rastoč pomen kolesarjenja na nacionalni ravni, kar omogoča tudi več prostora za radikalne in inovativne rešitve.

SLOVENSKO

THE CUTTING EDGE OF STRATEGIES FOR CYCLING PROMOTION

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ENGLISH

THE CUTTING EDGE OF STRATEGIES FOR CYCLING PROMOTION

Odense is a leading cycling city. Due to a continuous, long-sighted strategy of improving _ infrastructure, we continue to have a large and increasing number of cyclists. At the same time cyclist accidents decrease significantly. The well-developed infrastructure for cyclists is so complete that investments suffer a "diminishing returns" phenomena. Our greatest potential for more cyclists now, is to influence modal split. As traffic planners, our role goes from being a provider of good cycling conditions to helping people see the many advantages of and overcoming barriers against cycling. We have a history of well-known behaviour changing initiatives such as campaigns, media involvement and distribution of cycle path maps. The present project allows us to increase the depth and scope of the traditional methods and at the same time work for a combination of actions that include focussing on, outreach to employers, gimmicks, the health aspect, new cycle equipment that can help a car driver overcome a barrier and more. Our ambition is to be the leading cyclist city in Europe in 2002.

DEUTSCH

DIE NEUESTEN STRATEGIEN ZUR FÖRDERUNG DES FAHRRADVERKEHRS

Odense ist eine führende Fahrradstadt. Aufgrund einer kontinuierlichen, weitsichtigen Strategie zur Verbesserung der Infrastruktur haben wir weiterhin eine große und zunehmende Anzahl von Radfahrern. Gleichzeitig geht die Anzahl der Fahrradunfälle signifikant zurück. Die gut entwickelte Infrastruktur für Radfahrer ist so komplett, daß Investitionen unter einem Phänomen „abnehmender Renditen“ leiden. Unser größtes Potential zur Steigerung der Anzahl von Radfahrern besteht gegenwärtig in der Beeinflussung der Verkehrsaufteilung. Unsere Funktion als Verkehrsplaner geht über die Bereitstellung guter Bedingungen für Radfahrer hinaus. Vielmehr ist es auch unsere Aufgabe, den Menschen zu helfen, die vielen Vorteile des Radfahrens zu erkennen, und die Überwindung der Barrieren zu ermöglichen, die gegenwärtig noch vom Radfahren abhalten. Wir blicken auf eine Reihe bekannter Initiativen zur Verhaltensänderung wie Kampagnen, Medienbeteiligung und die Verteilung von Radwegkarten zurück. Das gegenwärtige Projekt erlaubt es uns, die traditionellen Methoden zu vertiefen und zu erweitern und gleichzeitig auf eine Kombination von Maßnahmen hinzuarbeiten, die eine Kontaktaufnahme mit den Arbeitgebern, Werbegags, den Gesundheitsaspekt, neue Fahrradausrüstung, mit deren Hilfe Autofahrer Barrieren überwinden können, und vieles mehr umfaßt. Unser Ehrgeiz ist es, 2002 die führende Fahrradstadt Europas zu sein.

SLOVENSKO

PRODORNE STRATEGIJE ZA PROMOCIJO KOLESARJENJA

Odense je vodilno kolesarsko mesto. Zaradi kontinuirane, dolgoročne strategije izboljševanja infrastrukture imamo veliko število kolesarjev, in to še narašča. Istočasno se občutno zmanjšuje število kolesarskih nesreč. Dobro razvita kolesarska infrastruktura je tako dopolnjena, da investicije podlegajo fenomenu, ko prednosti prenehajo naraščati v odnosu z naporom, ki se vloži. Naš največji potencial za povečanje števila kolesarjev je vplivati na razcep. V vlogi načrtovalcev prometa moramo poskrbeti za dobre pogoje za kolesarjenje in tudi pomagati ljudem, da spredijo številne prednosti kolesarjenja in premagovanje predsodkov do kolesarjenja. Prešli smo že skozi znane iniciative spreminjanja vedenja, kot na primer zborovanja, vključitev medijev in razdeljevanje zemljevidov s kolesarskimi stezami. Sedanji projekt nam omogoča, da povečamo globino in obseg tradicionalnih metod in da istočasno delujemo za kombinacijo dejavnosti, ki zajemajo osredotočanje, doseganje delodajalcev, trike, zdravstveni vidik, novo kolesarsko opremo, ki pomaga vozniku avtomobila premagati zaporo in še več. Naš cilj je postati vodilno kolesarsko mesto v Evropi leta 2002.

THURSDAY

WHAT HAS ODENSE DONE RIGHT? NEW WAYS FOR AN HOLISTIC CYCLE STRATEGY

ONE OF THE LEADING BICYCLE CITIES

Odense is one of Denmark's and Europe's leading bicycle cities. The number of cyclists has increased while the number of accidents has decreased. The positive results are due to a long-sighted, continuous planning with public funds earmarked for bicycle facilities.

PLANNING FOR BICYCLES

The City of Odense has a long tradition of planning for bicycles. In 1976 the city council approved a plan for a tightly meshed network of paths for all sorts of cycling trips. In the following years many paths were constructed along roadways and in recreational areas.

The purpose of cycling paths along roadways is to create safe, direct connections between residential areas, the workplace, schools, shopping areas, while the recreational paths give two-wheelers access to the many parks and nature areas in and about the city. The aim is not just to give people good access to recreational areas, but also to expose them to the positive experience of cycling and perhaps influence their choice of transport.

In the city center there are bicycle routes running north/south and east/west. These were established in the mid 80's, with partial funding from the Traffic Ministry. Parallel to the city's 1000 year anniversary a series of traffic renewal projects were established in the city center. The number of cyclists in central Odense went up by 50-100% close to the pedestrian area. We are now working on a bicycle ring around the center's nucleus, which has a large number of walking streets.

When a motorway was in the planning phase, the city was quick to insure safe crossing points for cyclists. The motorway doesn't create the same barrier that cyclists (and pedestrians) experience in many other cities with approximately twice as many crossing points for cyclists as for motor vehicles.



QUALITY STANDARDS FOR CYCLISTS

The cycling paths along roadways almost always have lighting and an asphalt surface. They are almost always separated from motor traffic and pedestrians by a curb. In the winter, the path along the road side has the same priority as the road for de-icing and snow removal. Therefore the paths have a higher priority than similar paths in other cities.

Many paths have been made along the roads designed for carrying relatively high volumes of motor traffic, while other bike-friendly road design is used on roads with lesser automobile volumes. On the outskirts of the city and other relevant places, paths are separate from the road system. The city also has a large number of traffic-calmed roads, which is beneficial for cyclists.

The recreational paths are generally lower quality with respect to surface, lighting and winter service.

CAMPAIGNING FOR MORE CYCLISTS

While we improve the infrastructure for cyclists, we also regularly inform (potential) cyclists. Most recently, the City of Odense has carried out a campaign with the objective of

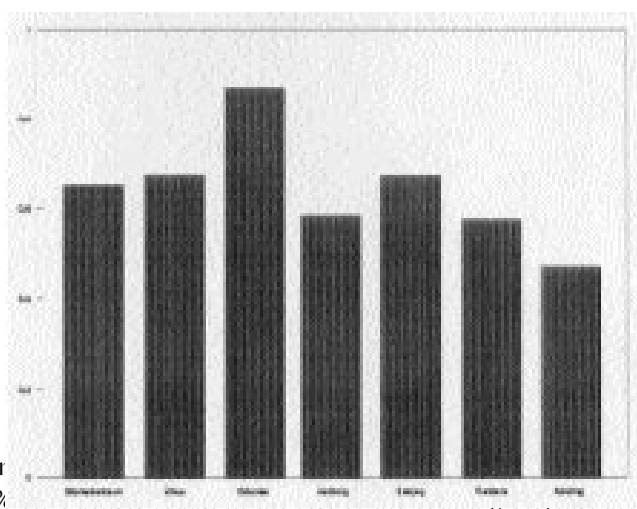
improving general knowledge for the good opportunities for travelling quickly and safely on a bike. A cycling map of Odense has been sent to every household in the city.

RESULTS

Within the city limits, there are 350 km of bike paths as well as a large number of shorter paths within limited areas and smaller recreational areas.

In the last 10 years, bicycle traffic has increased by 50%, while there has been little change in the rest of Denmark. Private car traffic has increased by 3.3% in Denmark, while Odense has an increase of 1.5%.

27% of the visitors in the city center come by bike, which makes cyclists the largest road-user group.

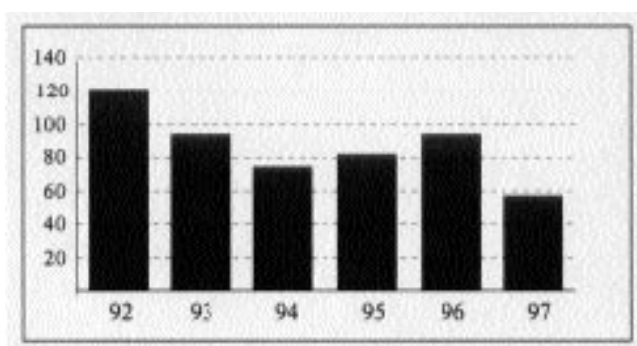


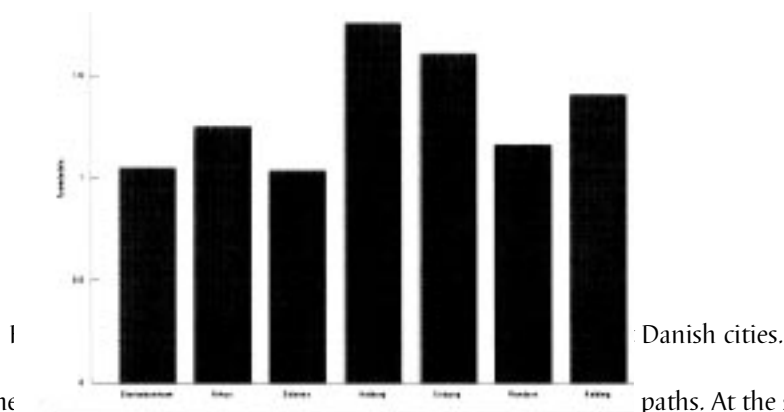
In 1990 the federal government reported a decrease in accidents of 22% in the same period. Considering the higher number of bike trips, the decrease in the number of accidents is a particular improvement.

largest Danish cities.

6 years, bicyclists experienced accidents decreased by 1 % in the

In the last 6 years, the number of bicycle injury accidents has been cut in half.





During the last 20-30 years, the measures have been established

paths. At the same time traffic calming redesigned to promote traffic safety.

The investments have resulted in good results in the form of greatly increased cycle traffic and a sharp decline in cyclist accidents.

A NEW TRAFFIC AND PARKING PLAN

A sector plan for traffic in the center of Odense is now underway. The plan gives a high priority to cyclist access, especially to the walking street areas.

While the two national routes will be maintained, the plan calls for a ring around the pedestrian areas.

Parking for cyclists will be improved in the form of larger parking lots and smaller areas will be afforded with bike racks. We will also experiment with different forms for bike racks with lock devices.

DENMARKS NATIONAL CYCLE CITY

Past initiatives have focussed mainly on infrastructure improvements. In contrast to these improvements, the City of Odense, with support from the Danish Road Directorate, has started a project (for \$600,000), which considers the five elements that constitute home-work traffic:

Home	where the residence is located
Person	the individual and her social relations
Horse	the transport mode
Road	the infrastructure used for transport
Field	the trip purpose - usually the workplace

The focus will be on specific trips with a specific purpose. The intention is to experiment with alternative strategies, which alone or in synergistic combinations can result in an increase in cycling. It is given that the individual chooses transport mode.

A complete transport plan includes hope to observe a change in mode it may be relevant to interview the

The motivation for a company to health.

For the participants, the process with the intention of making people

The key word is engagement, which is necessary for a change in travel behaviour.



institutions that wish to participate, . We some cases. For some people in the study,

ally correct image and increase employee

They work as advisors for certain households

As part of developing a bicycle policy for Odense, it is relevant to uncover the most important factors for modal choice and route choice. Ideally, we would like to develop a (computer simulation) model for cycle traffic.

In January this year, Odense was chosen as the Danish National Cycle City. Our application for further funding, \$2.5 mil., has been granted, which means that the project can be extended in time, depth and scope. The objective of the extended project will be to make the City of Odense known as Europe's best cycling city.

The project is now becoming more and more detailed, with more than 50 sub-projects.

One of the initiatives involves good contact with 30 private and public workplaces. They are being visited, and can hopefully be persuaded to take initiatives that supplement the city's initiatives.

Another example is a campaign for school children. We know that children get less exercise than just a few years ago, which is a health problem and a problem for their motor function. We plan to produce educational material concerning the choice of transport.

We will be in a position to offer bicycle alternatives matched with individual needs. For example, we have purchased a prototype transport cycle with seats for children. We will also lend cycle trailers to those who find it a good alternative for their transport needs.

FROM A CONSTRUCTION

The past two decades show a for a very ambitious cycle ne much car traffic there is. The r are an important connection that we have given the cyclists has a reputation as Denmark:



ears we have made a complete plan hole community, regardless of how et. The cycle routes in the city center prs to get the immediate impression element of the city's identity. Odense e Green Cycle City of Denmark.

By adding new elements to existing strategy, we are now achieving a synergistic effect. 2 plus 2 becomes 5 !

THE FRONTIER FOR A BICYCLE-FRIENDLY CITY THE CASE OF FERRARA (ITALY)

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THE FRONTIER FOR A BICYCLE-FRIENDLY CITY - THE CASE OF FERRARA (ITALY)

Ferrara is known as the Italian city of bicycles: for every ten people, four normally get around town by bicycle and 89.5% of the citizens use a bicycle. Ferrara is a city of artistic interest that attracts many visitors.

A large part of these people are not used to coming up against bicycle traffic every day and this is the cause of many accidents.

In a survey carried out in 1997 it was noted car drivers that did not live in Ferrara caused that a high percentage of the number of accidents in which cyclists suffered. The explanation was that car drivers from Ferrara were also cyclists and therefore familiar with problems as seen through the eyes of a cyclist. On the other hand, car drivers from elsewhere are not used to dealing with cyclists.

From this data the city authorities decided to fix a frontier: At the 8 main entrances to the city a banner with the words FERRARA CITTÀ DELLE BICICLETTE "CITIES FOR CYCLISTS" was put up. In this way they meant to warn whoever enters into the city for reasons of work, study or tourism that they will find a bicycle-friendly city and many cyclists who they will have to respect.

Another "frontier" was put up in the historic centre of the city, residents can enter the 50 hectare restricted traffic zone with a free pass, all the others must pay a tax of 1500 ITL (just under one Euro). The money obtained from this will go towards improving infrastructures for cyclists and for street furniture.

GRENZEN FÜR EINE FAHRRADFREUNDLICHE STADT - DER FALL FERRARA (ITALIEN)

Ferrara ist als italienische Stadt der Fahrräder bekannt. Von zehn Personen bewegen sich normalerweise 4 mit dem Fahrrad durch die Stadt, und 89,5 % der Bürger verwenden ein Fahrrad. Ferrara ist eine Stadt von künstlerischem Interesse, die viele Besucher anzieht.

Anhand einer 1997 durchgeführten Untersuchung wurde festgestellt, daß ein hoher Prozentsatz der Verkehrsunfälle, bei denen Radfahrer zu Schaden kamen, von auswärtigen Autofahrern verursacht wurden. Die Erklärung für diese Tatsache lautet, daß die Autofahrer aus Ferrara gleichzeitig auch Radfahrer sind und daher wissen, wie die Probleme aus der Perspektive des Radfahrers aussehen. Autofahrer von anderswo hingegen sind den Umgang mit den Radfahrern nicht gewohnt.

Aufgrund dieser Daten beschlossen die Stadtbehörden, eine Grenze festzulegen: An den 8 Hauptzufahrtsrouten in die Stadt wurden Banner mit dem Slogan „FERRARA CITTÀ DELLE BICICLETTE“ (Ferrara, Stadt der Fahrräder) angebracht. Auf diese Weise sollte jeder, der zum Arbeiten, Studieren oder als Tourist in die Stadt kam, gewarnt werden, daß er sich in eine fahrradfreundliche Stadt begibt und auf viele Radfahrer stoßen wird, die er zu respektieren hat.

Im historischen Kern der Stadt wurde eine andere „Grenze“ gezogen. Den Anwohnern ist die Zufahrt in die 50 Hektar umfassende verkehrsbeschränkte Zone mit einem kostenlosen Ausweis gestattet, während alle anderen eine Gebühr in der Höhe von 1500 ITL (etwas weniger als ein Euro) bezahlen müssen. Die eingehobenen Gebühren kommen der Verbesserung der Infrastruktur für Radfahrer und der Straßenausstattung zugute.

ENGLISH

DEUTSCH

MEJA ZA KOLESOM PRIJAZNO MESTO - NA PRIMERU KRAJA FERRARA (ITALIJA)

Ferrara je znana kot italijansko mesto koles: na vsakih deset prebivalcev se običajno štirje vozijo po mestu s kolesom in 89.5% meščanov uporablja kolo. Ferrara je tudi mesto, ki privlači številne obiskovalce zaradi umetniških interesov.

V raziskavi, ki je bila opravljena 1997, so ugotovili, da so vozniki avtomobilov, ki niso bili iz Ferrare, povzročitelji velikega odstotka nesreč kolesarjev. Razlaga, ki je sledila, pove, da so vozniki iz Ferrare tudi kolesarji in zato poznajo težave, kot jih vidijo kolesarji. Po drugi strani pa vozniki od drugod niso navajeni kolesarjev.

Na osnovi teh podatkov so se lokalne oblasti odločile postaviti mejo: na osmih glavnih prihodih v mesto so obesili vidne napise "Mesto kolesarjev". Na ta način so želeli opozoriti vse, ki prihajajo v mesto na delo, študij ali kot turisti, da vstopajo v mesto, ki je naklonjeno kolesarjem, da je teh veliko, in da jih morajo spoštovati.

Še ena meja je bila ustvarjena v zgodovinskem središču mesta: stanovalci lahko vstopijo z brezplačno prepustnico v cono 50 hektarjev, kjer velja omejitev prometa, vsi ostali pa morajo plačati 1500 lir (nekaj manj kot 1 evro). Denar, zbran na ta način, bo namenjen izboljšanju infrastrukture za kolesarje in za ulično opre

THE FRONTIER FOR A BICYCLE-FRIENDLY CITY THE CASE OF FERRARA (ITALY)

Is there a frontier between a bicycle friendly city and the rest of the world? In Ferrara's case the answer is yes.

Ferrara is known as the Italian city of bicycles, a well-known local saying says that here people learn to ride a bicycle before they learn to walk. For every ten people, four normally get around town by bicycle and 89,5% of the citizens use a bicycle. There are at least 120 000 bicycles in use among the 133 000 or so inhabitants, but the average possession per person is 2.5, while the number of cars in circulation is 33 000 (in bad weather there are a further 7 000).

Ferrara is also a beautiful city, the entire historic centre has been declared a world heritage site by UNESCO, a city of artistic interest with a strong emphasis on tourism that attracts many visitors. Also many workers arrive from other towns every day and since it is a university town the incoming student population is very high.

A large part of these people are not used to coming up against bicycle traffic every day and this is the cause of many accidents. It must be said that there are not many bicycle lanes within the historically determined city of Ferrara, the integration and not the segregation of the cyclist has been preferred. While separate radiating cycle lanes of between 5 and 8 km long have been and are being built to connect the outlying areas with the various inhabited centres.

In a survey carried out in 1997 it was noted car drivers that did not live in Ferrara caused that a high percentage of the number of accidents in which cyclists suffered. We have verified this information checking the number plates of the cars involved. The explanation was that car drivers from Ferrara were also cyclists and therefore familiar with problems of circulation as seen through the eyes of a cyclist. On the other hand, car drivers from elsewhere are not used to dealing with cyclists; and in particular are not used to considering the town as a mobility area mainly for cyclists and pedestrians (which together make up 50,7%).

From this data the city authorities decided to fix a frontier: At the 8 main entrances to the city a banner with the words FERRARA CITTA DELLE BICICLETTE "CITIES FOR CYCLISTS" was put up. In this way they meant to warn whoever enters into the city for reasons of work, study or tourism that they will find a bicycle friendly city and many cyclists who they will have to respect.

Another "frontier" was put up in the historic centre of the city, residents can enter the 50 hectare restricted traffic zone with a free pass, all the others must pay a tax of 1500 ITL (just under one Euro, the same price as a newspaper or a cup of coffee). The money obtained from this will go towards improving infrastructures for cyclists and disabled people as well as for street furniture.

It is a good idea for the Visitors to save their cars in the car parks on the edge of the city and to rent a bicycle, possibly using the "BICICARD" formula (10 Euro per day). This gives you a bicycle together with discounts in hotels, restaurants, shops and other reductions.

COMMUTERBIKES - THE MISSING LINK IN PUBLIC TRANSPORT SYSTEMS?

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COMMUTERBIKES - THE MISSING LINK IN PUBLIC TRANSPORT SYSTEMS?

The project of "commuter-bikes" is funded by The Danish Environmental Agency and has focused on developing a concept that could make a reliable, easy-doing and cheap bike rental system, which could serve as the final link between public transport and working places in city centres. Especially relevant for commuting trips longer than 10 - 15 km between suburbs and city centres. The important issue is to make a better integrated and environmental friendly system.

There has been conducted a survey of attitude towards a commuter bike system. After the survey, which has shown interesting results, effort has been placed of developing a substantial concept. Perhaps there will be a full scale trial in one or more Danish cities.

PENDLERFAHRRÄDER - DAS FEHLENDE GLIED IM ÖFFENTLICHEN VERKEHRSWESEN?

Das Projekt „Pendlerfahrräder“ wird von der dänischen Umweltagentur finanziert und konzentriert sich auf die Entwicklung eines Konzepts für ein zuverlässiges, einfaches und billiges Fahrradverleihsystem, das als letztes noch fehlendes Verbindungsglied zwischen öffentlichem Verkehr und den Arbeitsplätzen in den Stadtzentren dienen könnte. Es ist insbesondere relevant für Pendelstrecken von mehr als 10 - 15 km zwischen Vorstadt und Stadtzentrum. Der wichtigste Aspekt besteht in der Schaffung eines besser integrierten und umweltfreundlichen Systems.

In einer Umfrage wurde die Einstellung zu einem Verleihsystem für Pendlerfahrräder erhoben. Nach der Umfrage, die interessante Ergebnisse brachte, wurden Schritte gesetzt, um ein substantielles Konzept zu entwickeln. Vielleicht wird es in einer oder mehreren dänischen Städten einen Versuch im Maßstab 1:1 geben.

KOLESA ZA VOŽNJE V SLUŽBO - MANJKAJOČI ČLEN V SISTEMIH JAVNIH PREVOZOV?

Projekt o "kolesih za vožnje v službo" podpira danska okoljevarstvena družba in je osredotočen na razvijanje koncepta, ki bi podal zanesljiv, enostaven in poceni sistem izposoje koles, kar bi pomenilo končni člen med javnim prevozom in delovnimi mesti v središčih velikih mest. Še zlasti primeren bi bil za vsakodnevne vožnje, ki so daljše od 10 do 15 km med primestjem in središčem mesta. Pomembno vprašanje je, kako ustvariti boljše integriran in okolju prijazen sistem.

Izvedena je bila raziskava o mnenjih v zvezi s sistemom koles za vsakdanje vožnje v službo. Glede na raziskavo, ki je pokazala zanimive rezultate, smo se potrudili razviti trden koncept. Mogoče bodo izvedli celosten preizkus v enem ali dveh danskih mestih.

ENGLISH

DEUTSCH

SLOVENSKO

COMMUTERBIKES - THE MISSING LINK IN PUBLIC TRANSPORT

In the city centres a rented bike could transport the commuters the last part of their trip to the workplaces from buses or trains. This mode of transport would be both quick and with respect for the environment. A bike rental system especially designed for commuters using public transport therefore seems to be a good alternative to walking or interchanging between public transport in the inner cities. Surveys in three Danish cities Aalborg (150.000 inh.), Århus (250.000 inh.) and Copenhagen (1,4 mio. inh.) show great interest for such a rental system among passengers in public transport and to some extent also among the car users. A proposal for practical trials with such "commuterbikes" has been worked out for each of the three cities. In Aalborg the public transport company, Nordjyllands Trafikselskab has applied the central government for 50 % funding of a trial.

COMMUTERBIKES ARE AN ALTERNATIVE TO BUS OR TRAIN IN CITY CENTRES

Danish surveys show that only 10% of the journeys performed by bikes in relation to trips with regional buses or suburban trains are done in the city centres. The other 90 % are performed between the residences and the public transport system. The commuterbike project therefore has explored the possibilities of making a cheap and simple rental system for commuters using regional public transport systems to city centres. The aim is to make it easier to use a bike on the last part of the trip to the centre. This can give a better total transport solution for the actual passengers, and may on the longer term attract some new users (hopefully from the cars!).

Quality and competitiveness for public transport against the cars in the regional commuting from suburbs can be enhanced by a commuterbike-system. A commuterbike will in some occasions be a better alternative than to a change to other buses or trains on the last 1 -3 km of the trip. A commuterbike-system can also enhance accessibility of public transport to the inner cities, because it in many cases will be faster to ride the bike, than walking or waiting for the corresponding bus or train. This makes a greater area accessible within the same time consumption for commuters arriving at a station or terminal.

Basic concept in a commuterbike-system is, that the users can rent a bike on a monthly basis, and use this bike completely as a normal privately owned bike. The rented bike can be used on the last part of the trip from the public transport system to the workplace, but might also be used to do different errands (banks, post office or shopping) in the city centre on the way to bus or train back to the residence. Of course the bike can be used to other kinds of trips depending on the need of the actual user. If the bike is broken, damaged or stolen, it shall be very easy to get another bike for substitution.

First trial would be appropriate at the greater traffic terminals, where the existing staff could be helpful handing out or exchanging keys for the bikes, and the hire and spare commuterbikes could be safe in the lockable bike park area of the terminal.

INVESTIGATIONS

With funding from the Danish Environmental Protection Agency there has been established working groups in each of the cities Aalborg, Århus and Copenhagen. These working groups have with assisting consultants investigated, how a commuterbike-system actually could be implemented and funded in each city.

To probe interest and willingness to pay a rent there has been made a simple questionnaire survey among users of public transport and cars in each city. Questionnaires were distributed in the afternoon rush hours among passengers for trains, suburban/regional bus lines and on long time parking places, which were assumed to be used by car commuters. 11.500 questionnaires were distributed as postcards with "porto payez" and about 1.900 have been returned. The percentage of answers is thus about 17 %, which is slightly lower than in parking surveys conducted the same way.

The working groups have discussed, how the system should be organised to be as simple to use as possible. Further there has been discussions concerning solutions to make the system cheaper than existing bike rental systems, which implicate a rent of 4 - 500 Danish crowns, (DKK) per month. (1 US\$ is about 6 DKK).

GREAT INTEREST AND WILLINGNESS TO PAY

The questionnaire indicated, that between 8 to 36 % of public transport users would imagine themselves renting a commuterbike. Also 2 - 19 % of the car users were interested. About two thirds of the interested respondents were willing to pay 100 - 150 DKK per month.

Compared to a monthly fare ticket for the Danish public transport, this is relatively high willingness to pay. E.g. the price of a monthly ticket for a 20 - 25 km everyday return trip with public transport is 380 DKK in Copenhagen, 360 DKK in Aalborg and 430 DKK in Århus. In spite of this, potential users seem to be willing to pay a high extra price for commuterbikes, and therefore see them as a valuable supplement to existing public transport.

COMMUTERBIKES NEEDS SUBSIDY

Estimate of operating costs shows, that a Commuterbike costs about 230 DKK per month depending on the extent of vandalism, theft and maintenance. Compared with the 100 - 150 DKK, which surveys indicate as the potential users opinion of a fair rent, it is obvious, that a commuterbike system requires a subsidy for the difference. This subsidy seems to be at the same level as subsidy for a lot of public transport systems in Denmark.

Estimated operating costs for commuterbikes has been compared with operating costs for city buses or regional routes in the three cities. In average the commuterbikes are 75 % more expensive than citybuses and 3 times more expensive than regional buses calculated on base of passengerkilometers.

Commuterbikes however can also be regarded as a mean of improving quality of public transport for commuters. Then they may be assessed the same way as investments in terminals and bicycle lockers, which also represent greater investments.

If one third of commuterbike renters would represent new customers or customers, who stay in public transport system because of the commuterbike system, this system would be a zero solution for the company. Simultaneously there might be some environmental and capacitative benefits in rush hours, because extra buses could be dispensed.

It is the possibility of more customers and the environmental effects, which could justify a trial with commuterbikes.

Commuterbike systems are relevant in greater cities with a certain catchment area for regional bus or train traffic, and the same time equipped with a greater station or terminal in the city centre or close to this. At first commuterbike systems are estimated to be relevant for greater centres in the capital area and about 10 other Danish cities with more than 40.000 inhabitants.

RESULTS OF THE QUESTIONNAIRE:

Questionnaire shows a very positive attitude to the idea of commuterbikes - Between 8 to 36 % of the public transport users could imagine themselves as renting a commuterbike on a monthly basis. Of course this result shall be evaluated carefully because in reality, it might only be a minor part of the positive respondents, who actually will rent a bike, when the system is implemented. Nevertheless a share of e.g. 3 % of the commuters still would be a lot of users. Greatest "problem" seems to be, that the potential users in general want the rent to be low - about 100 - 150 DKK per month. This is much lesser than existing renting systems, which amount 4 - 500 DKK per month, and also less than the estimated operating costs for a commuterbike system.

The answers came from 26 % of the asked train passengers, 17 % of the asked bus passengers and 12 % of the asked car users from cars parked on long term parking places. This return percentage is relative low compared to e.g. parking surveys, but it is also normal that people return more answers, if they are affected by the subject for a questionnaire. This indicates that people with interest in commuterbikes probably might be overrepresented in the received answers.

Because of this bias, interpretation of results has been working with two percentages: The percentage in proportion to received answers, which normally is used in representative surveys, must indicate the upper limit for the interest for commuterbikes. If the percentage instead is calculated in proportion to the amount of distributed questionnaires, there will be missed some persons, with interest, but who have not returned answers - This percentage therefore can be used as an indication of the lowest interest for a commuterbike-system. This kind of evaluation shows an interest for commuterbikes between 6 and 36 % of bus passengers, 10 and 40 % of the train passengers and finally 2 and 19 % of the car users in the three cities. There is no significant difference between answers from the three cities.

Diagrams 1 - 4 below show some of the results for the 585 respondents, who had answered with a positive interest for renting a commuterbike on monthly basis.

Diagrams shows, that both male and female of all ages, thus with a slight overrepresentation of 20 - 39 year old persons, could imagine themselves as users of a commuterbike system, which in this way seems to have a broad appeal. Interest is greatest among train passengers, who accounts for 46 % of all the interested. Bus passengers accounts for 30 %, while the car users surprisingly accounts as high as for 24 %.

Most people (47 %) would use the bike on distances from 1 to 3 km. 60 % find it fair to pay a rent for 100 DKK or more per month, while only 24 % finds that 150 DKK or more would be fair.

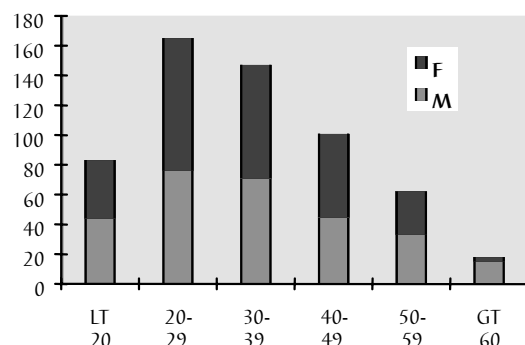


Figure 1. Distribution on sex and age (N=585)

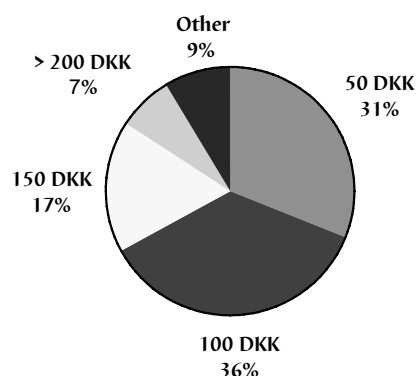
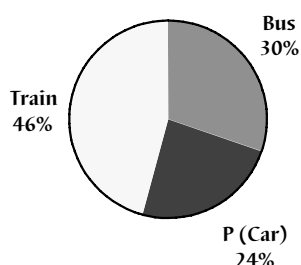


Figure 3. What would be a fair monthly rent? (N=585)



BASl

Development of the concept has included a lot of thinking concerning how the system should be operated.

Figure 2. Questionnaire distribution site (N=585)

Compared to a "normal" bike rental system the commuterbikes ought to be cheaper, because the bikes can be rented out more months of the year and also to stable customers. This gives the opportunity to distribute investments and costs on more months of rent, and simultaneously the wearing of the bikes might be less. Also the manpower to rent out the bikes ought to be lower.

Unfair distortion of competition with existing bike rent systems can be avoided, if the user has to show a monthly season ticket to public transport before renting a commuterbike. Of course this is needed more, if the system is operated with subsidy.

The commuterbike should be easy to rent, easy to use and easy to change in case of problems. Bikes could therefore be ordinary bikes with 3 gears. The bikes should not in colour or other features differ from other bikes, because the risk of vandalism or theft in this way can be kept on a "normal" level (The Zebra-principle).

Commuterbikes are to be rented on a monthly basis. First time a hire contract is signed together with a payment of a deposit/self risk amount. Subsequently the rent can be payed by giro or automatic from bank account. The user shall not pay for a new bike in case of theft, vandalism or other operational problems. In these situations the bike simply is changed with another bike from the pool of bikes for spare and rent.

The system could be operated by a private bike shop with subsidy or in its own (public) organisation or a combination of these two systems. In design of trial it is proposed, that the users in Aalborg and Lrhus are serviced by staff at the terminals, who on the other hand has a deal with a bike shop concerning the maintenance of the bikes. In Copenhagen there is proposed a system operated completely by a bike shop with subsidy.

It has been investigated whether an automatic locker system for the keys to the bikes could be purchased or designed for development. Such a system could make the bikes available all time every day, and also give possibility for placement of bikes in places without staff personal (e.g. greater bus stops). Such an automatic system seems not to be reachable at a reasonable price.

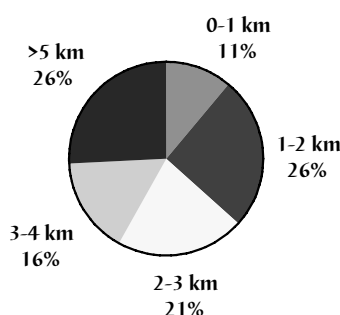


Figure 4. Expected distance for use of C-bike (N=585)

PRO MOTION TO WORK

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PRO MOTION TO WORK

The aim of the project was to examine methods of promoting cycling and walking to work available for an individual employer. Motives of the employers, advantages of and obstacles to walking and cycling as well as potential environmental and health gains were surveyed at twelve Finnish workplaces by a questionnaire with 1091 responses, an evaluation on the overall conditions at the workplaces, and a series of group interviews.

27 % of the respondents would like to increase cycling or walking if there were some improvements either along the way or at the workplace. The most promising methods are to make people conscious on one hand, and, on the other hand, to take care of simple everyday conditions like possibilities to dry out one's clothes at the workplace.

„PRO MOTION“ FÜR DEN WEG ZUR ARBEIT

Das Ziel des Projekts bestand darin, die Methoden zu untersuchen, die dem einzelnen Arbeitgeber zur Verfügung stehen, um Arbeitnehmer dazu zu bewegen, mit dem Fahrrad oder zu Fuß zur Arbeit zu kommen. Die Motive des Arbeitgebers, die Vorteile des Radfahrens oder Gehens, die Hindernisse, die davon abhalten, sowie potentielle Umweltvorteile und Gesundheitsverbesserungen wurden an zwölf finnischen Arbeitsplätzen mittels eines von 1091 Personen ausgefüllten Fragebogens, einer Evaluierung der Gesamtsituation am Arbeitsplatz und einer Reihe von Gruppeninterviews erhoben.

27% der Befragten würden gern mehr radfahren oder gehen, wenn es entweder entlang ihres Wegs oder am Arbeitsplatz selbst Verbesserungen gäbe. Die vielversprechendsten Methoden bestehen darin, einerseits ein Bewußtsein für das Anliegen zu schaffen und andererseits einfache alltägliche Vorkehrungen zu treffen, wie beispielsweise die Möglichkeit zu schaffen, Kleidung am Arbeitsplatz zu trocknen.

GIBANJE NA POTI V SLUŽBO

Cilj projekta je bil preverjanje metod za promocijo kolesarjenja in hoje, ki jih ima na voljo posamezni delodajalec. Motive delodajalcev, prednosti in ovire, ki jih prinašata kolesarjenje in hoja, kakor tudi morebitne okoljevarstvene in zdravstvene prednosti smo raziskali na dvanajstih finskih delovnih mestih s pomočjo vprašalnika. Dobili smo 1091 odgovorov, evalvacijo celotnih pogojev na delovnem mestu in serijo skupinskih intervjujev.

27% vprašanih bi želelo povečati kolesarjenje ali hojo, če bi bile storjene nekatere izboljšave bodisi na poti ali na delovnem mestu. Najobetavnejše metode so, da po eni strani ozavešimo ljudi, po drugi strani pa, da poskrbimo za vsakdanje malenkosti, kot na primer možnost, da lahko na delovnem mestu nekdo posuši oblačila.

ENGLISH

DEUTSCH

SLOVENSKO

PRO MOTION TO WORK - PROMOTING WALKING AND CYCLING TO WORK AT 12 FINNISH WORKPLACES

1. INTRODUCTION

Along with the continuous motorisation, the modern life style has become very sedentary. This trend is connected with the increase of so-called 'welfare sicknesses'. Leisure time sports alone cannot solve the problem because, usually, an active life style can be maintained only if it is a part of everyday routine. According to recent research, a daily 30 minutes period of moderate exercise is enough to maintain one's health. This makes cycling or walking to work an ideal way to promote health. Walking and cycling are also environmentally beneficial traffic modes. Out of journeys made by passenger cars in Finland in 1992, approximately half were shorter than 6 km, almost a quarter being less than 3 km - just convenient trips to cycle or walk.

The project consisted of a campaign and a survey carried out at twelve Finnish workplaces. The campaign included distribution of posters, brochures and material for eg. internal booklets of the workplaces. There were also specific theme days arranged at the workplaces. The aim of the survey was to examine methods of promotion available for an individual employer. Important factors like urban planning and traffic conditions were thus left outside the scope. The major research problems were 1) what are the motives of an employer to encourage the employees to increase cycling or walking to work, 2) which ways of promotion are the most promising ones, and, 3) what could be the potential health and environmental benefits of the promotion work.

The project was financed by a research programme launched mainly by the Ministry of Traffic and Communications, and the Ministry of the Environment. The main collaborator was the Sports for All Federation of Finland, other important collaborators being the UKK Institute for Health Promotion Research and the Tampere University of Technology.

The workplaces are divided into four groups by the overall transport conditions; three workplaces in each one.

- Group 1. In the inner city of Helsinki; the number of employees around 500 in each one; the public transport connections are very good.
- Group 2. In the centers of middle large cities (Turku and Tampere); the number of employees from 150 to 350; the public transport connections are relatively good.
- Group 3. In small towns; the number of employees varying between 100 and 1500; the public transport connections are almost nonexistent.
- Group 4. In suburb areas of middle large or large cities (Kuopio, Kouvola and Espoo); the number of employees around 200 in each one; the public transport connections are relatively poor.

2. MATERIALS AND METHODS

The core of the survey was a questionnaire, by which i.a. the present distribution of traffic modes was examined. The employees were also asked a personal rating of importance of some possible advantages and disadvantages of cycling or walking to work, and, similarly, of some potential improvements in the overall conditions at the workplace. Finally, they were asked if they would increase cycling or walking in the case that the conditions either along the way or at the workplace were improved. The questionnaire was distributed to every employee except for two workplaces where a sample was used. Altogether 1091 responses were received, corresponding to 34 % of the employees.

The overall physical conditions at the workplaces were evaluated with the help of a checklist of detailed questions about the number and the quality of bicycle stands, showers, wardrobes for clothes, and possibilities to dry out one's clothes. In order to examine the motivation of the employers to take any real measures, and to identify the attitudes towards potential methods of promotion, about ten group interviews and ten individual ones were carried out. As a research method, the interviews as well as the evaluations were found very useful.

3. THE POTENTIAL OF INCREASING WALKING AND CYCLING

3.1. THE MAXIMAL NUMBER OF BICYCLE OR WALK JOURNEYS IN A SHORT TERM

In a short term, the maximal potential number of walk or bicycle journeys can be supposed to correspond to the number of people living inside a distance appropriate for cycling or walking. What is this 'critical distance'? When asked about an appropriate distance for a regular walk to work, the median response at all twelve workplaces was 3 km, the corresponding result for cycling being 7 km. Due to the climate of Finland, the willingness to cycle without doubt decreases remarkably in winter. One could suggest that the 'critical distance' in wintertime is not much above a walking distance. On the other hand, in summertime it might be considered even longer than the above mentioned 7 km: 10 km, maybe even 15 km.

How many people living inside the '7 km circle' then do walk or cycle to work? In the Table 1, the distribution of distances from home to work is presented by the four groups of workplaces. In the Table 2, the distribution of the main traffic mode is presented by season.

Table 1. The distribution of distances from home to work by workplace groups.

distance	group 1 (%)	group 2 (%)	group 3 (%)	group 4 (%)	all (%)
0=<3 km	14	19	56	20	29
3=<7 km	22	26	27	31	26
7=<15 km	34	32	8	24	24
15 km<	29	22	10	25	21

Table 2. The distribution of the main traffic mode used by employers by workplace groups. (s=summer; w=winter)

main traffic mode*	group 1 (%)		group 2 (%)		group 3 (%)		group 4 (%)		all (%)	
	s	w	s	w	s	w	s	w	s	w
cycling	18	2	23	3	55	21	31	6	33	8
walking	11	12	13	17	12	30	10	16	12	19
public transport + walking**	8	9	2	3	0	0	1	1	3	4
public transport	33	49	17	28	1	2	3	11	16	25
private car (driver/passenger)	27	26	45	49	32	46	55	66	37	42
other modes	3	3	1	1	1	1	0	0	2	2

* At least in 3 days a week.

** The alternative was formulated 'a significant part of the journey made on foot'.

Given the '7 km circle' as an appropriate distance for regular walking or cycling, there seems to be a gap of ca 20 % between the 'potential' and the 'reality' in summer, and of 40-60 % in winter.

Of course, the personal willingness is the most decisive factor. When asked whether they would increase walking or cycling in case the conditions were improved, on the average 27 % of the respondents answered 'yes'. The proportion ranged from 18 % to 39 % by workplace, being lowest in the group 3, in which the proportion of walking and cycling was already high. The proportion was highest in a hospital (group 1), where both overall conditions at the workplace, and the traffic conditions were poor. The second highest percentage (31 %) was at a road administration office (group 2), where the traffic conditions were much easier, but the conditions at the workplace were evaluated to be maybe the poorest of all the workplaces involved.

The 'conditions to be improved' were not strictly defined. It is possible that some respondents were dreaming of eg. shorter distance or other factors beyond the power of an employer. Out of the group of 'would-increase' thus 26 % were living longer than 15 km, 47 % living inside the '7 km circle'.

3.2. THE POTENTIAL ENVIRONMENTAL AND HEALTH GAINS

In terms of pure health gains, an employer should not be interested to invest very much in getting healthy employees still healthier. From the environmental point of view, respectively, only employees today using a car but maybe tomorrow cycling or walking are of interest.

In order to identify a 'target group' for the promotion work, the employees were asked a personal estimation of health as well as their patterns of leisure time physical activity. Combining these data, two groups were made. In one group the employees found their health 'good' or 'rather good', and they used to carry out some leisure time physical activity at least two times a week. The rest of the respondents, here, are treated as a 'target group', as increased exercise would probably make them healthier. Based on these assumptions, a rough estimation is made in the Table 3. When estimating the potential environmental gain, respondents using a car as the main traffic mode were used as the 'target group'. An estimation is in the Table 4.

Table 3. An estimation on potential health gains of promoting walking and cycling to work.

the preconditions of the health gain	all		group 1		group 2		group 3		group 4	
	n	%	n	%	n	%	n	%	n	%
1. Increasing walking or cycling to work would probably improve the respondents' health	317	100	103	100	104	100	72	100	38	100
2. In addition, he/she lives not longer than 7 km from the workplace	128	40	36	35	39	38	40	56	13	34
3. In addition, he/she would increase walking or cycling if conditions were improved	45	14	13	13	17	16	11	15	4	11

Table 4. An estimation on potential environmental gains of promoting walking and cycling to work.

the preconditions of the environmental gain	all		group 1		group 2		group 3		group 4	
	n	%	n	%	n	%	n	%	n	%
1. The main traffic mode of the respondent is a private car	371	100	78	100	117	100	111	100	65	100
2. In addition, he/she lives not longer than 7 km from the workplace	137	37	11	14	37	32	64	58	25	38
3. In addition, he/she would increase walking/cycling if conditions were improved	42	11	3	4	15	13	19	17	5	8

4. THE METHODS OF PROMOTION

4.1. THE ADVANTAGES AND OBSTACLES

When asked about the personal significance of 18 alternative advantages of walking or cycling to work, the respondents found the following ones the most important (rather/very important):

- | | |
|--|-----------------------|
| 1) it makes you feel good | (98 % of respondents) |
| 2) it helps to keep you in good condition | (98 %) |
| 3) it maintains your working capacity | (94 %) |
| 4) it is environmentally beneficial | (91 %) |
| 5) it helps to keep you slim | (89 %) |
| 6) you do not need to care about time tables of public transport | (85 %) |

At some workplaces, also the propositions 'it helps to decrease traffic jams', 'it is economically advantageous compared with other traffic modes', 'you do not need to drive in the rush-hour traffic', and 'it is easier to estimate the time needed for the journey' were among the 'top 6' advantages. Maybe amazingly, 'by walking or cycling you can save time' and 'when walking or cycling, it is easy to stop off at e.g. a shop', as well as the argument about saving leisure time for other things but exercise were not especially popular advantages.

The employees were also asked to assess the personal significance of 30 possible obstacles to walking or cycling to work. The most difficult ones (rather/very important) on the average were:

1) the rain makes it uncomfortable	(74 %)
2) it is too uncomfortable in the cold season	(71 %)
3) dangers due to slipperiness	(70 %)
4) a too long distance	(57 %)
5) poor possibilities to dry out clothes at the workplace	(53 %)
6) it takes too much time	(52 %)
7) it is too dangerous in the dark	(51 %)
8) clothes needed at work are difficult to carry without creasing them	(45 %)

It is no wonder that the top is dominated by factors connected with the northern climate. More interesting is what comes after them. Out of factors an employer could contribute relatively easily, possibilities to dry out clothes was considered most important. In two workplaces this factor was found problematic by even 73 % of respondents. At some workplaces, among the 'top 8' there were also insufficient possibilities to have a shower and, at one workplace, the lack of a safe place for a bicycle.

Difficulties with carrying papers or clothes needed at work were considered very important at workplaces with a great number of engineers, civil servants and other white-collar workers. At two workplaces, also the necessity to have a car for official journeys was regarded as a major obstacle.

The results correspond quite well to the evaluations of the overall conditions. Somewhat surprisingly, the lack of safe or attractive routes, insufficient information about traffic regulations, as well as the risk of breaking down of the bicycle were not considered important factors at all.

4.2. THE IDEAS FOR THE PROMOTION WORK

In the interviews, the employees generally seemed to take the advantages of walking or cycling as self-evident: health, working capacity, good feeling etc. The risks of injuries were not usually brought out as an objection. However, when discussing methods of promotion, the limits of the acceptability were reached quite soon.

In the questionnaire, the respondents willing to increase walking or cycling were asked about a list of 14 possible improvements: "Would you increase walking or cycling to work in case the following things were better?" The most popular alternatives ('yes, somewhat'/'yes, remarkably') were:

1) the employer would somehow reward employees walking or cycling	(64 %)
2) there would be cycling equipment for sale at the workplace for reduced prices	(56 %)
3) the employer would provide you a new and good bicycle as a benefit in kind	(53 %)
4) there would be better wardrobes to keep clothes at the workplace	(52 %)
5) there would be better conditions for drying up one's clothes at the workplace	(52 %)

At some workplaces, wardrobes and drying possibilities were considered remarkably more important. Also the alternative 'having a wash at the workplace would be easier' was among the 'top 5' at three workplaces. In the interviews, problems concerning the overall conditions at the workplace were often brought out, but, generally, they were not regarded as 'real' obstacles: whether you walk or cycle or not always depends on yourself, or on the distance. Of course, this conclusion is based on quite a simplified view on behaviour.

Promotion methods most commonly suggested by the interviewees included 1) a campaign week during which employees could have their bicycles repaired at the workplace; 2) a possibility to buy cycling and other equipment like studded tyres, bicycle bags, helmets or rechargeable lights with some support by the employer; and 3) regular 'impulses' of information.

A major problem facing any radical methods was the question of equality. For example, an extra pay for those keeping themselves fit was regarded as unfair on those who cannot walk or cycle because of eg. too long distance. A possibility to have a shower during working hours was opposed by similar arguments. Generally, walking and cycling to work were not seen as anything that should be treated differently from other ways of exercise. At several workplaces the employer used to support exercise economically, eg. by paying tickets to swimming pool. Still a little extra pay for employees regularly walking or cycling was considered impossible.

5. THE MOTIVATION OF THE EMPLOYERS, AND HOW TO ORGANISE THE PROMOTION WORK

Although accidents cause a significant part of absences from work, the key persons generally did not call to question the usefulness of walking and cycling. On the contrary, in most cases they seemed to believe in a positive impact: the more walking and cycling, the less absences and the better the atmosphere. In addition to health and increased working capacity, at some workplaces the environmental image of the organisation was found a real motive. This was typical of organisations for which a positive environmental image is in general an important and maybe difficult challenge.

However, the benefits were understood more as qualitative ones than anything that could be expressed in money. The attitudes against any privileges for employees walking or cycling were clearly negative. Journeys between home and workplace belong to the private sphere and any interventions by the employer would be met with resistance. The easiest methods of promotion appeared to be technical improvements of the overall conditions at the workplace. Yet the opinions about what kind of conditions are good enough varied greatly. The importance of eg. drying possibilities for clothes was suspected. Anyway, at least at two workplaces clear decisions for improvements were made as a direct result of the project.

Who, then, should take care of promotion work? It was generally emphasised that the impacts of the campaign will not sustain if the work is not continued somehow. Let us have a look at persons involved in the project activities. The most of them were working with personnel administration and especially with organising physical activities for the personnel. In some cases they were involved in occupational health issues. In the interviews, the members of the occupational safety organisation and shop stewards were well represented. Also many persons responsible for environmental management were very interested in the project.

Some interviewees saw various sports clubs supported by the employer as suitable actors in promotion activities. More often, however, it was considered that in order to guarantee the continuity it is necessary that the organisation itself is responsible for the work. Still the work should be integrated to existing structures instead of creating new ones. A kind of network between promoters in various workplaces with organisations involved in health promotion and environmental protection might help to make the work more continuous.

WORK-HOME-CYCLING-PROJECT. 1995-1998.**Henrik Nyrup**

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WORK-HOME-CYCLING-PROJECT. 1995-1998.

The target of the so called ABC-Project is to transfer 6% of the trips made by car into trips on bicycle before the year of 1998. This increase in bicycle traffic should be created at the expense of car traffic and at the same time without creating of increase in bicyclist injuries.

This implies that the project has as a goal to convince 6% of those who drive their car between their place of work and home, that they are better off taking their bicycle instead. The main tools for making this possible is a direct north-south bound bicycle route through the town centre, company actionplan and some campaigns.

PROJEKT: MIT DEM FAHRRAD ZUR ARBEIT, 1995 - 1998

Die Zielsetzung des sogenannten ABC-Projekts besteht darin, 6% der Fahrten mit dem Auto bis zum Jahr 1998 durch Fahrten mit dem Fahrrad zu ersetzen. Dieser Anstieg des Fahrradverkehrs sollte auf Kosten des Autoverkehrs gehen, wobei jedoch die Anzahl der verletzten Radfahrer nicht ansteigen darf.

Dies impliziert, daß das Projekt es sich zum Ziel gesetzt hat, 6% jener, die mit dem Auto zur Arbeit fahren, davon zu überzeugen, daß es besser für sie wäre, statt dessen mit dem Fahrrad zu fahren. Die wichtigsten Werkzeuge, um dies zu ermöglichen, bestehen in einer direkten Nord-Süd-Fahrradroute durch das Stadtzentrum, einem Firmen-Aktionsplan und einigen Kampagnen.

KOLESARSKI PROJEKT DELO-DOM 1995-1998

Cilj takoimenovanega projekta ABC je, da pred letom 1998 6% poti, ki jih opravimo z avtomobilom, preusmerimo na kolesa. Takšno povečanje prometa s kolesi naj bi nastalo na račun prometa z avtomobili in istočasno brez povečanja števila poškodb kolesarjev.

To pomeni, da je naloga projekta prepričati 6% tistih, ki se na delovno mesto in domov vozijo z avtomobilom, da je zanje bolje, če se peljejo s kolesom. Osnovno sredstvo za izvedbo tega je neposredna kolesarska povezava sever-jug, ki pelje skozi mestno središče, delovni načrt in vrsta dejavnosti za doseg tega načrta.

ENGLISH

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SLOVENSKO

WORK-HOME-CYCLING-PROJECT. 1995-1998.

PRESENTATION OF THE MUNICIPALITY OF AALBORG.

Aalborg is the regional centre of North Jutland. There are 160.000 inhabitants in the city and 260.000 in the Metropolitan area. The regions trade and industry are concentrated in the city and the city is the main service and cultural centre in North Jutland. The University of Aalborg attracts students from all over the country. Naturally these activities are followed by a large amount of traffic, both in the central city area and in the whole region.

A number of cities in Denmark including Aalborg have received subsidy to finance a demonstration project with promoting bicycle traffic in Denmark. The demonstration project is called **Work-Home-Cycling-Project** - in Danish **Arbejde-Bolig-Cykel-projektet**.

THE WORK-HOME-CYCLING-PROJECT.

The aim of the project was to transfer 6% of the trips made by car to trips on bicycles before 1998. The project area was a 10 km north-south corridor. This increase in bicycle traffic should be created without an increase in bicycle accidents.

The main tools for making this possible were a new direct north-south bicycle route through the city centre, company activities and some campaigns.



Photo 1. Bicycle path constructed in relation to the project

The new bicycle route was established along a 10 km. corridor which includes a lot of work-places. There were already major north-south bound roads in the corridor. However, heavy car traffic and a lack of bicycle paths on important stretches made it unpleasant for those who would choose cycling for transport.

As a part of the ABC-project bicycle paths were constructed along several heavily trafficked roads. For example along the most trafficked street in the city area where 30.000 cars and 3.500 bicycles drive each day.

The aim of establishing a continuous system of bicycle paths was to give better access to trading areas and to the recreational in the municipality.

As an alternative to the bicycle paths along the heavily trafficated roads a 10 km bicycle route was constructed. Here the cyclists can drive with less car traffic.

In the outskirts of the corridor the new route gives cyclists a peaceful and safe alternativ to the usual routes along the major roads. In the town center the new route consists of cycle paths along major roads. The principle objective is to allow cyclists the freedom to chose between a quick, direct route and a more quiet but perhaps longer route.

The company action plans for bicycle traffic were to be made in cooperation with contacts from volunteer compagnies. Nine companies and public institutions joined this part of the project. All together they have 12.000 employees.

There were tree steps in the strategy for making company action plans :

Step 1: Questionnaire. The action plans starts with a questionnaire for the employees about their transportation habits - for example ; Why do they take the car/bicycle to work and what could induce them to use a bicycle.

These important information were used by each company at company action plans for use of bicycles. The questionnaire was also used to provide information for the before/after study which was a part of the evaluation of the project.

Step 2: Company bicycles. To start of the project the project the nine companies presented 35 new company bicycles at a press conference in May 1996. The employees used the bicycles for the next 6 months for on-duty short trips into the city instead of cars or taxi.

In the test period the 35 company bicycles drove 21.700 km. which was 620 km. for each bicycle on average.



Photo 2. Compagny bicycles from the local hospital

The evaluation of the test period showed, that the compagny bicycles were used frequently for distances between 2 and 6 km. The major reasons for using bicycle were : to get faster to the destination and to get exercise and fresh air.

A survey at the compaies showed that 97% of the employees thoght it was a good idea with company bicycles.

Step 3: Better conditions for cyclists. Some of the companies have improved conditions for cyclists - for example better parking facilities.

In the project period there have been several campaigns. The major campaign took place in Spring, where the construction of the new route was completed.

The aim was to inform inhabitants in the municipality about the new bicycle network. A bicycle-newspaper was sent to all 75.000 households in the municipality.

A map showing bicycle paths in the municipality was made giving the inhabitants ideas to bicycle rides.

Through the project period the Press was kept up to date on the project and the first results. Beyond the comprehensive mentioning of the project in the newspapers a 15 min. long programme was presented on local TV.

EVALUATION OF THE WORK-HOME CYCLING-PROJECT.

The evaluation of the project was based on registrations. Partly on the bicycle route and partly among the participants in the companies.

Countings of cyclists were carried out on different locations along the route. Based on these countings it was possible to say whether the project had a direct influence on the numbers of cyclists.

The countings showed that the highest numbers of cyclists on the route was 4200 cyclists a day. On the northern part of the route there has been a 5%-20% increase in the numbers of cyclists.

At the same time the companies in the project have noted a 30% increase on parked bicycles.

One of the aims of the project was to make the participants use bicycle instead of car.

The questionnaire showed a success. 9% say they have changed their driving habits because of the project. The changes were equally shared between cycling from home to work more often and a general increase in cycling.

The 9% change should be related to the fact that before the project started bicycles were used for transport by 45% of the participants.

SUMMARY.

The Work-Home-Cycling-Project in Aalborg has placed the bicycle in focus. The nine project companies have succeeded in getting several employees to use the bicycle on a daily basis.

A number of new bicycle paths and a new bicycle route have resulted in safe conditions for the cyclists. As a result more people use the bicycle.

Conditions for the bicyclists in the municipality of Aalborg have improved. This is certified by the fact that only 15% of the interviewed participants think that Aalborg is not a good city for cyclists.

THE FRENCH RESEARCH PROJECT: "ECO-MOBILITY"

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THE FRENCH RESEARCH PROJECT: "ECO-MOBILITY"

Within the framework of the French Transport Research and Development Programme, INRETS has developed, in collaboration with two others teams, a serie of researches on "urban mobility and non- motorised travel" : the " ECO-MOBILITY " Project.

1. The INRETS team is researching on the role of walking and bicycling in urban mobility. The aim of this part of the research is to assess the potential for modal transfer. Among the different studies conducted : a pilot survey on the pedestrian activity with computer observations.
2. The " 4 D " research team has undertaken analysis of European and North American experiences in this field.
3. The IFRESI research team has conducted a series of studies concerning obstacles (urban severances) and solutions for improving walking and bicycling in urban areas and developed alternative scenarios.

DAS FRANZÖSISCHE FORSCHUNGSPROJEKT „ECO-MOBILITY“

Im Rahmen des neuen französischen Verkehrs-Forschungs- und Entwicklungsprogramms hat das nationale Verkehrsforschungsinstitut in Zusammenarbeit mit anderen Organisationen eine Reihe von Forschungsvorhaben zum Thema „Mobilität im urbanen Bereich und nicht-motorisierter Verkehr“ realisiert : das Projekt „ECO-MOBILITY“.

1. Das Forschungsteam INRETS hat die Rolle analysiert, die der Fußgänger- und Fahrradverkehr im Kontext der urbanen Mobilität spielen. Das Ziel dieses Bereichs des Forschungsvorhabens besteht darin, das Potential für eine Verschiebung der Verkehrsaufteilung zu beurteilen.
2. Das Forschungsteam „4D“ hat die in Europa und Nordamerika in diesem Bereich gesammelten Erfahrungen analysiert.
3. Das Forschungsteam IFRESI hat eine Reihe von Studien in bezug auf Hindernisse (urbane „Cuts“) und Lösungen zur Verbesserung des Fußgänger- und Fahrradverkehrs in städtischen Gebieten in Zusammenhang mit dem öffentlichen Verkehr erstellt und alternative Verkehrsszenarien entwickelt.

FRANCOSKI RAZISKOVALNI PROJEKT EKOMOBILNOST

V okviru novega raziskovalnega in razvojnega programa francoskega transporta je raziskovalni inštitut za nacionalni transport s sodelavci razvil serijo raziskav o mobilnosti v urbanih naseljih in nemotoriziranem prevozu ter projekt poimenoval Ekomobilnost.

1. Raziskovalna skupina INRETS je analizirala vlogo hoje in kolesarjenja pri mobilnosti v urbanih naseljih. Cilj tega dela raziskave je ugotoviti potencial vzorčnega transporta.
2. Raziskava skupine "4D" je zajela analizo evropskih in severnoameriških izkušenj na tem področju
3. Raziskovalna skupina IFRESI je razvila serijo študij, ki obravnavajo ovire (urbani posegi v okolje) in rešitve za izboljšanje pogojev za hojo in kolesarjenje v urbanih naseljih ter razvoj alternativnih zamisli.

ENGLISH

DEUTSCH

SLOVENSKO

THE FRENCH RESEARCH PROJECT: "ECO-MOBILITY"

Urban daily mobility: how to promote a change in favour of walking and cycling

1. THE CONTEXT: THE EVOLUTION OF URBAN MOBILITY IN FRANCE

Over the past fifteen years, travel in French towns has been marked by a considerable increase in the use of motor vehicles, which have become the dominant mode of travel. On the other hand, the share of public transport in city dwellers' daily mobility has remained almost stable, despite considerable investments made over this period by French towns into developing or improving metro, tramway and bus networks. The spread of the motor car has been essentially to the detriment of non-motorised modes of transport: bicycling and especially walking.

T1 - Daily mobility in France: evolution of the modal split

	Private Motor Vehicles		Eco-mobile chain		
	CAR	Motorbike	Public Transport	Bicycle	Walking
1994	63.5 %	1.4 %	9.0 %	2.8 %	23.2 %
1982	48.6 %	4.2 %	8.6 %	4.5 %	34.1 %
<i>% evolution</i>	+ 32 %	- 67 %	+ 5 %	-37 %	- 31 %

In this context, it is essential to raise the status of non-motorised modes of transport : on the one hand, because of the excessive cost to the community of the use of the motor car in towns (congestion, noise, pollution, accidents) as well as the cost of developing a closely meshed public transport service on the outskirts, and on the other hand, in order to hold back urban sprawl, in which the motor car has been an important factor. Furthermore, the development of "eco-mobile" modes, such as walking and cycling, corresponds to a growing awareness that compact multi-function towns are advantageous in terms of accessibility to urban services and of public health (the importance of physical exercise).

The ECO-MOBILITY Project aims to gather information in order to make this option credible and attractive.

2. THE "ECO-MOBILITY" PROJECT: HISTORY AND PRESENT SITUATION

The second four-year French Transport Research and Development Programme (PREDIT II, 1996-2000) was launched in 1996. For the first time, the Ministry of the Environment was party to this programme, alongside the Ministry of Transport and a certain number of industries, notably the automobile industry.

The involvement of the Ministry of the Environment in PREDIT has not, however, greatly modified the direction of the programme, since two thirds of the funds (approx. 1 billion Euros) are still assigned to the motor car and are devoted essentially to the development of so-called "clean" engines. Nevertheless, it has resulted in the theme of "urban mobility and non-motorised travel" being added to the "prospects and strategies" section of the PREDIT programme, but with only limited funding (150 000 - 300 000 Euros).

It was in this context that the ECO-MOBILITY project was proposed (May 1997) by a team from the National Transport Research Institute (INRETS), in association with two other research teams, "IFRESI (a laboratory of economics at the National Centre for Scientific Research - CNRS), and "4D" (Association for Debates on the Do's and Don'ts of Sustainable Development).

* - The general framework of the ECO-MOBILITY project:

The "ECO-MOBILITY" research project is constructed around three major sections :

The first approach focuses on an analysis of mobility.

The aim of this part of the research is to assess the potential for modal transfer from the private motor car to the "eco-mobile" chain. The National Transport Research Institute (INRETS) is responsible for this part and has worked more specifically on the trends in urban mobility and modal choice, and on better knowledge concerning the walking and cycling practices.

The second approach focuses on the analysis of experiences overseas aimed at generating renewed interest in eco-mobile modes, and in particular on assessing the results of these experiences. Special attention has been given to the European and North American experiences in this field. This part has been undertaken by the association "4 D".

The third approach aims at developing scenarios for change :

The obstacles to the development of non-motorised travel are analysed, and in particular the question of urban severance (e.g. expressways, railways, factories...), and solutions proposed for overcoming such problems. The objective is to assess the real possibilities for achieving modal transfer by modifying the urban environment. This part, undertaken by IFRESI, reintroduces a social dynamic and looks more concretely at prospects for change in the technical, developmental and transport management fields.

*** - First results and works in progress of the ECO-MOBILITY project**

In 1997, the INRETS, IFRESI and "4D" teams each drew up an inventory of information available on the subject and developed a series of possible lines of research. A state of the art report was presented at the end of 1997, and the proposed lines of research were submitted to the PREDIT "Non-motorised travel" thematic group committee. In 1998, four research projects were accepted and funding granted. Three of these projects are now completed and the first results are available.

Proceeding from the First part of the Project, the National Transport Research Institute conducted three specific research projects in 1998-1999 :

1. A statistical analysis of the evolution of mobility in the French towns, and typological studies of cyclists and pedestrians. See in the Proceedings of the Velocity'99 Conference (Workshop J1), the paper by F. Papon.
2. "RESBI : experimental research on the behaviour and strategies of cyclists in urban traffic". This experiment, using video techniques, is presented by J.J. Denis and J.R. Carré in these Proceedings (Workshop D5).
3. a «pilot» survey on walking as an activity, summarised below.

Concerning the Second part of the project, see in the Velocity'99 Conference proceedings (Workshop A3) the paper of L.Comélieu, B.Dahm, V. Lauriola, entitled "An analysis of experiences overseas of a revival of non-motorised modes".

For more detailed information concerning the Third part, see the paper by F. HERAN, in the Velocity '99 Proceedings (Workshop C5), entitled "Methods of evaluation of Severance effect...".

Note that these studies comprise only part of the research planned by the ECO-MOBILITY project, which should continue to develop over the next two or three years. Its progress will nevertheless depend on the decisions which the PREDIT "Non-motorised" committee will take in 1999.

Since all these papers concerning the various themes of the "ECO-MOBILITY" project are available in other chapters of the Velocity '99 Proceedings, we will limit our presentation here to INRETS research on walking, currently in progress.

3 - "WALKING AS AN ACTIVITY, MEASUREMENT AND CHARACTERISTICS OF PEDESTRIAN TRAVEL", A PILOT SURVEY (Jean-René CARRÉ, Arantxa JULIEN)

*** Reasons and problematics**

Surveys on mobility do not fully account for walking. The methods employed tend to underestimate the importance of walking in daily trips. In reality, walking is considered to be a minor mode, a necessary "link" in the organisational mechanics of transport, but devoid of interest from a strategic point of view. "In transport planning, where technical considerations have predominated for years, pedestrians have been treated as elements capable of adapting, without their psychological and physical limits having ever been duly taken into consideration." [Greuter and Häberli -1993]. The aim of this research, is to remedy this lack of knowledge of the practices and needs of pedestrians.

*** The Method and the pilot survey**

The research project aims to provide : 1) a precise measurement of the share of walking in daily trips (which is also necessary for the calculation of accident risk), 2) a detailed description of the routes pedestrians take, 3) a full description of the indicators characterising pedestrian activity 4) an analysis of the factors affecting the decision to adopt, continue or abandon walking for everyday travel (characteristics of individuals and the types of areas crossed). The method proposed consists of coupling interviews with direct observation and measurement of people's movements.

Interviews.

What users say contributes to understanding the reasons for their choosing a particular strategy, and to identifying the parts of their trip which were pleasant, safe or otherwise. Lastly, the people involved make a drawing of their trip on paper (mental map).

Observations and measurement of pedestrian activity.

A detailed reconstruction of trips made on foot requires observation in the field. An exploratory study, conducted in 1997, demonstrated that the most efficient method involves having an observer accompany the people during all their trips of the day. Using a special hand computer, the observer notes and measures the actions (9) undertaken and their duration. At the same time, the observer records the characteristics of the physical environment.

*** Analysis:**

All the data gathered are transferred to a desk-top computer and brought together, essentially by means of a single time base. In a preliminary series of analyses, these results are compared with those which would have been obtained by using the criteria applied in conventional household surveys on mobility of people. Other factors are analysed: strategies, modal choice, the quality of urban space and descriptions of the trips (mental maps).

A pilot survey was conducted on this basis in the Paris urban area at the beginning of 1999. On account of the time required to process each interview-observation (about 20 hours), the sample is relatively small, but it is considered that approximately a hundred cases constitute a sufficient number of diverse situations for our hypotheses to be validly tested.

*** Results:**

The data obtained in this pilot study is being processed. It is therefore too early to present definitive results. At this stage, the preliminary results do indeed seem to confirm the general hypotheses made, and which are as follows:

- a) The total duration of walking seems to remain constant, whereas conventional household surveys show that the share of walking is diminishing constantly and rapidly.
- b) Differentiation of social activities leads to pedestrian mobility being comprised of numerous short sequences on foot, while the trips people make solely on foot between their home and their destination tend to diminish.
- c) These sequences on foot constitute a decisive factor for people when determining which mode of transport they will choose, as does safety.
- d) Actual exposure to traffic risk corresponds to a very small part of walking sequences; which, for this very reason, tends to increase this risk considerably.

4 - CONCLUSIONS

In France, policy debate on urban travel, is dominated by the sterile argument opposing Public Transport and the private motor car. So, in our research, we attempt to highlight a point which is not yet really appreciated in France, the role of these proximity modes in those travel chains including public transport. Proximity modes and public transport are therefore complementary and mutually reinforce one another. They must be conceived together, as a whole, since they constitute an eco-mobile chain, which is the only alternative to the motor car and in which consideration is given to the quality of urban life to be taken into consideration in terms both of sociability ("urbanity") and public health.

It is therefore no longer sufficient to think solely in terms of improvements for cyclists and pedestrians. Such an approach can even be counterproductive. The notion of "road-sharing" is tending to become the "politically correct" stance of planners, but in its practical applications, "sharing" leads to an even greater segregation of the public domain and results in urban passage points becoming even more complex and less legible (and increases risk, as well as the cost of managing them).

Similarly, the transition from today's "auto-mobility" to a true "eco-mobility", will not be achieved solely by taking measures to promote walking and bicycling or by appealing to people's civil behaviour and public spiritedness. In order to reduce the negative impact of motor traffic on the lives of city-dwellers (which is the major challenge towns will have to face over the coming years), it will be necessary to severely limit use of the motor car. This will be achieved only by reintroducing the restrictions from which the motor car has been freed over time (e.g. parking on all-so-limited public land); and by internalising the costs which the automobile system has externalised, (accidents, wasted time, pollution, land occupation). Indeed, it is these privileges and externalities which have made it possible for the motor car to achieve its world-wide success and lead to an excessive development of its use. Providing people with information on these externalities and their effects would be an efficient means of awareness-raising and of prompting changes in travel behaviour, and would lead to transport policies beginning to integrate these new constraints.

TWO LEGS GOOD, TWO WHEELS BAD? ATTITUDES TO CYCLING AND WALKING COMPARED

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TWO LEGS GOOD, TWO WHEELS BAD? ATTITUDES TO CYCLING AND WALKING COMPARED

Many transport plans aim to 'promote walking and cycling', but often have no proposals for promoting walking. So we say 'walking and cycling' but only promote 'cycling'. However, the modes are very different: for example, in the UK, walking is in dramatic decline, whereas cycling is not. Jointly promoting two modes that require very different strategies may be counter-productive.

This paper will speculate on the similarities with attitudes to cycling that are emerging from research focussed on attitudes to walking to work in England. We hope to help identify what would encourage people to walk and thus provide a lead for future strategies.

ENGLISH

ZWEI BEINE GUT, ZWEI RÄDER SCHLECHT? VERGLEICH ZWISCHEN DER EINSTELLUNG ZUM GEHEN UND FAHRRADFahren

Viele Verkehrspläne zielen auf eine „Förderung des Fußgänger- und Radfahrerverkehrs“ ab, haben oft aber keine Vorschläge, wie man das Gehen fördern kann. Deshalb sprechen wir zwar vom „Gehen und Radfahren“, fördern aber nur das „Radfahren“. Zwischen diesen beiden Fortbewegungsarten bestehen große Unterschiede. In Großbritannien nimmt beispielsweise das Gehen dramatisch ab, das Radfahren jedoch nicht. Diese beiden Fortbewegungsarten, die sehr unterschiedliche Strategien erfordern, gemeinsam fördern zu wollen, ist unter Umständen kontraproduktiv.

Das Referat beschäftigt sich mit der Ähnlichkeit, die die Einstellung der Engländer zum Arbeitsweg zu Fuß, die gerade anhand einer Untersuchung ermittelt wurde, zur Einstellung zum Radfahren aufweist. Wir hoffen, bei der Identifikation von Möglichkeiten helfen zu können, die Menschen zum Gehen zu bewegen, und so einen Ansatzpunkt für künftige Strategien zu liefern.

DEUTSCH

DVE NOGI DOBRO, DVE KOLESI SLABO? PRIMERJAVA ODNOSOV DO KOLESARJENJA IN HOJE

Številni transportni načrti težijo k "promoviranju hoje in kolesarjenja", vendar nimajo predlogov za promocijo hoje. Tako rečejo "hoja in kolesarjenje", toda promovirajo samo kolesarjenje. Vendar so težnje različne: v Veliki Britaniji, na primer, je interes za hojo dramatično upadel, medtem ko za kolesarjenje ni. Zato je lahko skupno promoviranje obeh načinov, ki zahtevata različne pristope, neproduktivno.

V referatu je podano razmišljanje o podobnostih z odnosi do kolesarjenja, ki izvirajo iz raziskave, usmerjene na odnose do hoje na delo v Angliji. Upamo, da bomo lahko pomagali odkriti tisto, kar bi vzpodbudilo ljudi k hoji in tako dalo zagon za prihodnje načrte.

SLOVENSKO

TWO LEGS GOOD, TWO WHEELS BAD? ATTITUDES TO CYCLING AND WALKING COMPARED

INTRODUCTION

In the city, walkers and cyclists are companions not competitors. For good cycling conditions we also need good walking conditions to prevent more people from turning to cars. Getting the right policies to encourage each mode is mutually beneficial. Understandably then most local transport plans today include the aim of 'promoting walking and cycling'. However, although they almost always contain proposals for promoting cycling they almost never have any actual proposals for promoting walking, apart from pedestrianisation. So like a mantra we say 'promote walking and cycling'; then we encourage cycling; then congratulate ourselves afterwards for having promoted both of the green modes, as though walking will somehow automatically benefit.

Does it matter? We think it does. The modes are different in important ways. To take three simple, generalized issues:

- Trends: in the UK for example, walking is in dramatic decline, cycling is not
- Users: almost everybody walks, but only a small minority cycles
- Speed: in cities, cycling is faster than driving, but walking is much slower

Jointly promoting two modes that might require very different strategies may be counter-productive. For example, for drivers frustrated by slow speeds in congested streets, cycling is an alternative but walking is not. Similarly, safety for cyclists (from cars) is a transport policy issue, but one of the major safety issues for walkers - danger from other people - is not.

This paper will examine these issues by speculating on the similarities and differences between attitudes to cycling and attitudes to walking. When our current research project focussed on walking to work is complete we hope to shed light on what would encourage people to walk and thus provide a lead for future strategies.

WALKING TRENDS

As a method of travel, walking has been declining steadily and this could be partly attributed to trends suggested by Banister as explanations for changes in travel patterns (Banister, 1995). These include rises in car ownership and use, changes in demographics, employment patterns, social structure of society, location of facilities, and increased levels of disposable income. For journeys under one mile the percentage taken on foot has declined from 86 per cent in 1976 to 80 per cent in 1997 (DETR 1998a; 1998b). Journeys of all lengths on foot have decreased from 35 per cent in 1975/76 to 29 per cent in 1994/96. Even some of the shortest journeys are increasingly being made by car; 25 per cent of all car journeys are now less than two miles and 7.5 per cent of all car journeys are less than one mile (DoT, 1996a; DETR, 1997; Potter, 1997).

As a response, new government initiatives include the encouragement of walking as part of the New Realism in transport thinking. In 1997 a consultation paper on walking was released (DoT, 1996b) and a National Walking Strategy is due to be launched in 1999. Some local authorities are now taking positive action to promote and encourage walking but they face difficulties in developing strategies in circumstances where advice and good practice is only now appearing (Lumsdon and Tolley, 1999). Moreover, while increasing car dependency may be seen as the context for the decline in walking, it is important not to miss the intrinsic issues which influence the decision whether to walk or not on a specific trip. In other words, any explanation of the decline in walking - and thus strategy to reverse it - must consider the specific real and perceived obstacles to walking.

Much past research has focused on concern over the pedestrian environment and has attempted to determine deterrents to general utilitarian walking (Hitchcock and Mitchell, 1984; National Consumer Council, 1995; General Consumer Council for Northern Ireland, 1997). General utilitarian walking has declined and the main deterrents include volume and speed of traffic; poor pavement conditions; lack of crossing facilities; fear of crime; litter; and poor weather. Addressing some of these concerns might encourage people to walk more often and further distances (Caunter et al., 1997).

Other factors that have been identified as significant when considering whether to walk are distance, time and availability of other modes (Royles, 1995). TEST (1976) determined that walking was important for journeys of up to approximately one mile and this figure has remained fairly constant since then (DETR, 1998b). However, as the proportion of shorter distance journeys made by the car increases, it may be that the percentage of people willing to walk for up to one mile will decrease. This suggestion is particularly pertinent when viewed in the context of the rising importance of time-saving as one of the dominant themes of the late Twentieth Century.

In sum, it appears that the specific deterrents to walking on a particular trip can be classified into three main areas of concern:

1. Distance of the journey and the time it would take.
2. Concern over the physical environment.
3. Concern over the social environment.

What this type of research can tell us is the number and type of people who walk, for what purpose, over what distances and what deters them. Clearly, this type of knowledge enables planners and politicians to make more effective decisions about provision. It is not, however, sufficient: Hillman, in particular, has been a sustained proponent of the need for walking to be considered in its own right alongside other forms of transport (Hillman and Whalley, 1979). He has criticized published statistics for omitting journeys of under one mile thereby underestimating the role walking plays within the transport system (for example, Hillman, 1997) and argued that this omission distorted the perceptions of walking in the minds of those formulating policies, which had negative consequences for attitudes to walking. He argued that because of this, walking was not considered a viable method of travel and therefore people often failed to consider walking when making a transport choice (Hillman, 1994).

The barriers to walking are thus not just those of specific deterrents for specific trips, but include overarching issues of attitude. This is precisely the issue that has emerged in recent research on cycle promotion - that it is not the specific deterrents that obstruct growth, but the failure of most people to even put cycling on their personal agenda. Thus although walking and cycling are different in many respects, there are similarities in attitudes to the two modes that make it advantageous to examine them in parallel. Indeed, in general it can be argued that the social acceptability of walking and cycling as modes of transport has been marginalised in favour of travel by car which has assumed social superiority as a transport mode in aspects such as comfort, safety, privacy and status.

THE SOCIAL CONSTRUCTION OF "ACCEPTABLE" MODES OF TRANSPORT.

The decline in cycling began earlier than the decline in walking and consequently research and policy interest in cycling is more advanced than it is for walking. The main thrust in cycling research in the 1980s included determining the likely effects on cycling of providing large scale cycle networks (McClintock and Cleary, 1993). The overarching belief was that provision of cycle infrastructure would increase levels of cycling. At the same time a parallel strand of research looked at the perception of cycling as a mode of transport and found that the low social status accorded to cyclists was a major dissuasive factor to cycling (Finch and Morgan, 1985; Davies et al., 1997). This research demonstrated that although provision of infrastructure was seen as an important element to encourage cycling, it was felt equally as important to develop a "cycling culture" i.e. to socially construct cycling as an acceptable mode of transport (Finch and Morgan, 1985).

Davies et al. (1997) linked the shift in attitudes necessary to effect change in cycling behaviour to previous public health campaigns that have been successful in changing the acceptability within society of certain behaviours, such as drink-driving and smoking in public places. Three elements were forwarded as agents of change. Whilst it was important to implement situational and environmental measures and to achieve organisational change (such as in green commuter plans), individual and social behaviour change was also seen as vital. This can be effected by applying the "contemplation of change" model, which is commonly expressed in five key stages: pre-contemplation; contemplation; ready for action; action; and maintenance. To effect the maximum change in behaviour, efforts should be concentrated on moving people from stage to stage rather than trying to achieve the end-state in one go (Davies et al., 1997).

To summarise, research has shown that just providing improved facilities or infrastructure (i.e. a better physical environment) is not likely to lead to more cycling, though it might make existing cyclists more comfortable. To effect real modal change efforts need to be directed more towards attitudes, what we might call the perceptual environment. As research on walking proceeds, (still years behind that on cycling) are we going to find that attitudes towards, and perception of walking as a mode of transport are as important as any physical deterrent to walking?

There is as yet no convincing evidence in this area. It is true that a similar incremental approach has also been adopted in health promotion fields where it has been recognised that the best results, in terms of personal and public health gains, will be achieved by moving the least fit to the next category of fitness (Haskell, 1994). However, there is some doubt about the application of the contemplation of change model if it relies on identification of positions on the scale from questionnaire surveys, for this may only provide a superficial and perhaps not truly representative picture of whether people would actually change their behaviour. Therefore, the issue of travel behaviour change needs to be more fully explored in qualitative work in order to identify individual barriers and motivations to change. The model may then have to be modified or developed depending on the results of this work.

This view is supported by outcomes from a questionnaire survey of employees concerning their journey to work (Goodman, 1998). In this some 62 per cent of respondents thought it too far to walk for the whole journey and up to 35 per cent found too many problems with public transport for it to be used in combination with walking. However, though they felt able to pronounce on these issues, it emerged that 70 per cent of the respondents had never walked for their whole journey to work and 52 per cent had not walked for even a part of it. This suggests that the deterrents to walking to work are actually perceived deterrents and points strongly to the need to probe more deeply into the perceptions and attitudes held by employees about the pedestrian environment and the use of walking as a mode of transport. Moreover respondents also stated that what would encourage them to walk to work would be improvements in the circumstances that have so far acted as deterrents. Though this is consistent with other research findings, as the deterrents appear to be perceived the encouragements are also likely to be perceived and again this points to the need for further exploration through more qualitative methods.

We cannot put too much credence on these questionnaire results, but it is interesting to note that 'image' (in the sense of arriving at work dirty or sweaty etc.) was also seen as important by a third of respondents. This may be emerging evidence that the attitudes to walking are as important in modal choice as are attitudes to cycling. On the other hand, it may be that the journey to work is different from other motives for walking and thus has different criteria by which it should be judged. We shall see.

CONCLUSIONS

From the review of literature some clear messages have emerged. Until recently, walking has been neglected in policy and planning and as such has been marginalised in the attention and resources directed towards it. This has led to a negative image of walking as a viable mode of transport and a subsequent decline in levels of general utilitarian walking.

A number of research questions are thus thrown up. More research is needed into the perception of aspects of the physical and social environment that impede or enhance the walking experience, especially because we are also aware of the widening gap between objective safety and subjective safety (Sustrans, 1996). We know that it is the groups that currently walk most (women and children) who feel most vulnerable and therefore have the greatest potential for continuing reduction of walking. The research question thus is:

Will those that perceive themselves as vulnerable walk (or be allowed to walk) when the gap between objective safety and subjective safety is so large?

Secondly, the distance over which people have to travel to work has increased which, in combination with changes in employment patterns, demographics, social structure, lifestyle and location of facilities, makes the possibility of walking less likely. More research is needed in this area to determine how far people are prepared to walk to work and how much time they will spend doing it. The question is:

Could it be that the case for walking, as a slow mode, is fatally flawed in a world where one of the dominant *leitmotifs* of travel behaviour is 'saving time'?

And lastly, connected to this and also to much social research is:

Can walking prosper when we place higher value on the benefits brought by space-extensive lifestyles than on those brought by 'community' and 'neighbourhood'?

In general, too little is known about pedestrians, their motivations and needs. There is a need to consider walking in a broader context, not in isolation as a means of transport, but in the context of community and individual attitudes to lifestyle and sustainability. Current trends in walking are negative and much of the explanation is behavioural. Our view is that as the percentage of people constrained to walk has fallen, so has the level of walking on essential trips such as to work. This is inherently a behavioural choice: if an acceptable alternative to walking exists then it seems that most will

choose it. With time, this can lead to a choice of home that is so distant from work that the individual is bound into use of the car. Conversely, walking may come to be 'reconstructed' as a leisure activity only, with utilitarian walking seen as the province of social failures and losers who have no car-based alternative. The key issues are behaviour modification by ourselves as individuals and the holding of perceptions - on cars, on status, on image, on time-saving - that inhibit this.

Our research on attitudes to walking (as distinct from those on cycling), will continue. We have argued here that walking and cycling are different in important ways and deserve their own research, but we would not want to obscure their many similarities. Both have witnessed a decline in direct correlation to the rise in car ownership and use. Moreover, both walkers and cyclists are particularly vulnerable to harm by motorised traffic. As traffic congestion has grown, competition for space on the road has intensified, often resulting in hostility and aggression towards other road users and increasing the vulnerability of pedestrians and cyclists, who have no external protection against assault. Both modes have been marginalised by the car in almost every respect and in most locations, emphasising again the social construction of walking and cycling as inferior modes of transport in relation to the car. There may be differences between them in terms of emphasis, but just as walkers and cyclists in the city are companions not competitors, so are researchers on the two modes seeking a cure to the same sickness.

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BICYCLE TRAFFIC FOR EVERYDAY OUT OR GREAT TOWNS: ("ALLTAGSRADVERKEHR IM LÄNDLICHEN RAUM")

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ENGLISH

BICYCLE TRAFFIC FOR EVERYDAY OUT OF GREAT TOWNS PROMOTION OF EVERYDAY BICYCLE TRAFFIC IN LOWER AUSTRIA

„Traffic Saving Community“ 1998 - 2002:

Investigation of potentials for modal shifts in rural local traffic; cycling is, in contrast to urban areas, faster than motorised transport even on routes as short as half a kilometre.

Objective: Changing of mode selection by improving the image of cycling (bicycles can be used 250 days / year).

Main focus: Creating a different awareness as far as mode selection is concerned.

Traffic consulting in Lower Austria - consulting service of the Government of the Province of Lower Austria. The responsibility for short and medium-distance individual traffic lies with the communities. However, the Lower Austrian communities (90% have less than 5,000 inhabitants) can't afford to employ traffic experts. Therefore, the Lower Austrian Traffic Consulting Service supports the communities in implementing the basic objectives of the Traffic Concept of the Province of Lower Austria: traffic reduction, modal shift in favour of environmentally friendly public transport, promotion of favourable forms of mobility (incl. bicycle traffic and improvement of the image of cycling).

Other implemented measures:

Bicycle traffic programmes, cycling infrastructure (necessity), counter-flow cycling in one-way streets, multi-purpose lanes, cycling in pedestrian zones, bicycle parking facilities - adequate application and quality criteria.

Presentation of two studies: distance kept by car drivers overtaking cyclists, bicycle-friendly redesign of thoroughfares.

THURSDAY

DEUTSCH

BICYCLE TRAFFIC FOR EVERYDAY OUT OR GREAT TOWNS: ("ALLTAGSRADVERKEHR IM LÄNDLICHEN RAUM") FÖRDERUNG DES ALLTAGSRADVERKEHRS IN NIEDERÖSTERREICH: -

"Verkehrsspargemeinde" 1998 - 2002:

Auslotung der Verlagerungspotentiale im ländlichen Gemeindebinnenverkehr -radfahren ist hier im Gegensatz zur Stadt auf nur einem halben km schneller als autofahren.

Ziel: Veränderung der Verkehrsmittelwahl durch Imageverbesserung des Radverkehrs (Fahrradeinsatzmöglichkeit 250 Tage/Jahr).

Hauptgewicht: Bewußtseinsänderung bei der Verkehrsmittelwahl

NÖ-Verkehrsberatung- Beratungsstelle des Amtes der NÖ-Landesregierung: Der NMIV ist Gemeindesache. Die NÖ-Gemeinden, 90% unter 5.000 Einwohner, können keine Verkehrsexperten beauftragen. Hier hilft die NÖ Verkehrsberatung bei der Umsetzung der Grundziele des NÖ-Landesverkehrskonzeptes: Verkehrsvermeidung, Verkehrsverlagerung auf den Umweltverbund, Förderung sinnvoller Mobilität (auch Radverkehr und dessen Imageverbesserung).

Weitere realisierte Maßnahmen:

Radverkehrskonzepte, Radverkehrsanlagen (Notwendigkeit), Radfahren gegen Einbahnen, Mehrzweckstreifen, Radfahren in Fußgängerzonen, Radabstellanlagen - richtiger Einsatz und Qualitätskriterien

Präsentation zweier Untersuchungen: Seitenabstandsverhalten, fahrradfreundlich umgestaltete Ortsdurchfahrten

VSAKDANJI KOLESARSKI PROMET NA PODEŽELSKEM PODROČJU**POSPEŠEVANJE VSAKODNEVNEGA KOLESARKEGA PROMETA V SPODNJI AVSTRIJI (SA):****"Občina z malo prometa" 1998-2002:**

Poglabljanje v možne premike v podeželskem prometu znotraj ene občine – kolesarjenje je tukaj, v nasprotju z mestom, hitrejše le na relaciji " km.

Cilj: Sprememba izbire prevoznega sredstva s pomočjo izboljšanja predstave ljudi o kolesarskem prometu (možnost uporabe kolesa 250 dni na leto).

Osnovna pozornost je posvečena spremembi zavesti pri izbiri prevoznega sredstva

Prometno posvetovanje v SA- posvetovalnica urada SA deželne vlade. NMIV je stvar občine. SA občine, 90% med 5.000 prebivalci, ne morejo naročiti prometnih izvedencev. Tukaj pomaga SA prometno svetovanje, z uresničevanjem glavnih ciljev SA deželnega prometnega koncepta: preprečevanje prometa, reševanje prometne problematike v okoljevarstvenih združenjih, pospeševanje premišljene mobilnosti (tudi kolesarski promet in izboljšanje slike o njem).

Drugi realizirani ukrepi:

Koncepti kolesarskega prometa, infrastruktura za kolesarski promet (nujnost), kolesarjenje proti smeri vožnje na enosmernih cestah, večnamenski vozni pasovi, kolesarjenje v conah za pešce, naprave za postavljanje koles- pravilna uporaba in kriteriji kvalitete

Predstavitev dveh raziskav: obnašanje ljudi glede na stransko razdaljo, prijazne poti za vožnjo skozi naselja

„ALLTAGSRADVERKEHR IM LÄNDLICHEN RAUM“

Alltagsradverkehr aus der Sicht der Niederösterreichischen Landesverwaltung und Möglichkeiten der Förderung in ländlichen Bereichen.

Die Grundlage ist das Niederösterreichische-Landesverkehrskonzept 2. Fassung 1997

Zielsetzung: Verkehrszuwachs im motorisierten Individualverkehr minimieren

Umsetzung von Maßnahmen zum Beispiel auf dem Gebiet der Raumordnung, der Telekommunikation, der Verbesserung der Fahrzeugtechnik und auch der Verlagerung auf den nicht motorisierten Individualverkehr.

Maßnahmen auf dem Sektor Verlagerung auf Zu-Fuß-Gehen und Radfahren fallen zum Großteil in den Verantwortungsbereich der Gemeinden, die aufgrund ihrer Größe dabei überfordert sind.

Die Problematik unseres Landes und des Radverkehrs

In ländlichen Bereichen ist es sehr einfach in das Auto einzusteigen und es an einem anderen Ort wieder „fallen“ zu lassen. Es herrschen somit nicht die gleichen Voraussetzungen bezüglich Schnelligkeit des Radfahrens wie in den Städten Maribor oder Graz.

Besonders wichtig sind daher Werbungsmaßnahmen zur Veränderung der Verkehrsmittelwahl.

Bewerbungsmaßnahmen in Langenlois - die Verkehrsspargemeinde:

Modellprojekt 1998 - 2002 - in einem Ort mit 6500 Einwohnern

Projektziel: nachhaltige Verringerung des Zuwachses des motorisierten Individualverkehrs und Eindämmung des verkehrsbedingten CO₂-Ausstoßes durch Soft-politics

Besonderheiten des Projektes:

dörfliche Strukturen und kein touristischer Ballungsraum

große Anzahl von Maßnahmen - Schwerpunktjahre

Erfolgsmessung und Erfolgskontrolle

Hilfestellung für die Gemeinden - die Niederösterreichische Verkehrsberatung

Beratungen erfolgen verkehrsträgerübergreifend und kompetenzüberblickend, Entscheidungs- und Argumentationshilfen werden geboten.

Probleme hinsichtlich des Radverkehrs in Niederösterreich

Radverkehrskonzepte

Konzepte für den Alltagsradverkehr und für den Freizeitradverkehr sind grundlegend unterschiedlich.

Im Alltagsverkehr wird das Rad als Verkehrsmittel eingesetzt, das heißt bei fast jeder Wetterlage, 250 Tage im Jahr. Wege über 4 km werden selten tagtäglich zurückgelegt.

Bauliche Radwege sind nur in den wenigsten Fällen nötig. Werden Radwege überflüssig angelegt, so entstehen Nachteile, zum Beispiel die Erhöhung der Kraftfahrzeuggeschwindigkeiten.

Es fehlen sehr oft nur einige Verbindungswege um Radfahren attraktiv zu machen.

Achtung: Die Räumung des Streusplitts auf Radwegen oder Geh- und Radwegen ist den Gemeinden anscheinend zu wenig Wert, oder die Radfahrerlobby ist nicht so stark wie die Autolobby.

Verluste an Fahrkomfort und die Gefahr eines Reifenschadens sind die Folge.

Straßenraumaufteilung - was bringt sie? - Effizienzuntersuchung umgestalteter Ortsdurchfahren von Prof. Dr. Zibuschka:

Ergebnisse: bis zu 56% mehr Radfahrer, insgesamt 26% weniger Unfälle mit Personenschaden, 72% weniger Tote, 26% weniger verletzte Radfahrer und kein toter Radfahrer mehr. Durch die richtige Anlage von hier notwendigen Radwegen (in Stockerau zum Beispiel fahren pro Tag circa 14.000 Kraftfahrzeuge) fühlen sich 71% der Radfahrer sicherer.

Öffnung von Einbahnen für Radfahrer

Radfahren gegen die Einbahn ist vor allem in Städten zu finden, die eigene Verordnungskompetenz haben. Durch Informationsarbeit unsererseits wollen wir eine einheitliche Meinung im Land und auf lange Sicht die Verlagerung der Kompetenzen vor allem auf Gemeindestraßen hin zu den Gemeinden erreichen.

Seitliche Blockmarkierungen vor der Einführung von Mehrzweckstreifen - Untersuchung vom Niederösterreichischen Straßendienst, Dr. Mitsch:

Ergebnisse: 40% weniger Verkehrsunfälle (Sachschaden inkludiert), 40% weniger Verletzte und Tote, 60% weniger verletzte Radfahrer.

Lösungen bei Konfliktpunkten oder Konfliktstrecken - Beispiele aus Niederösterreichischen Gemeinden

Bei abseits vom Kraftfahrzeugverkehr hinter Hecken oder ähnlichem geführten Radwegen verschwindet der Radfahrer aus dem Gesichtsfeld des Kraftfahrers. Das Zusammentreffen an Kreuzungen bringt Probleme und Sicherheitsverluste.

Beispiele:

Schutzstreifen zum Gehsteig

Zusammenführung bei Kreisverkehren

Radabstellanlagen - wo und wie werden sie richtig eingesetzt:

Überall wo Abstellanlagen für Kraftfahrzeuge benötigt werden, sind auch Radabstellanlagen wichtig. Diese sind aber den Zielen immer am nächsten anzubringen. Fahrradabstellanlagen am falschen Ort werden nicht benutzt.

In Niederösterreich wurden seit 1994 etwa 5.000 Zweiradstellplätze an Bahnstationen errichtet. Bis zum Jahre 2005 werden weitere 15.000 errichtet. Die Finanzierung erfolgt gemeinsam mit dem Bund (Österreichische Bundesbahnen), den jeweiligen Gemeinden und dem Land Niederösterreich im Rahmen der Nahverkehrsfinanzierung.

Kriterien zur Ausgestaltung:

Wetterabhängige Nutzung, Aufenthaltsdauer der Lenker, Witterungsschutz, Radaufnahme, Einsehbarkeit

Besonderheit in Niederösterreich:

„BIKE safe“: Vollautomatische Fahrradgarage mit Chipkartenverwaltung in der Landeshauptstadt St. Pölten

RURAL TRAVEL & TRANSPORT (RTT) AND ECONOMIC DEVELOPMENT: PROBLEMS AND PROSPECTS IN RURAL AFRICA

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RURAL TRAVEL & TRANSPORT (RTT) AND ECONOMIC DEVELOPMENT: PROBLEMS AND PROSPECTS IN RURAL AFRICA

This paper covers:

- the concept of rural accessibility and its importance in rural development,
- findings from the RTT pilot projects in Malawi and Zimbabwe,
- key problems in rural Africa regarding rural "accessibility", and
- possible solutions to rural access problems through proper local planning and improved mobility; emphasising the Non Motorised Transport.

The above subjects present a challenge to the conventional approaches to rural transport, with their focus on roads and motorised vehicles. The emphasis is on the emerging awareness in Africa of the scale of the transport burden shouldered by the rural communities to meet their basic needs, and of the degree to which it inhibits their social and economic development.

VERKEHR & BEFÖRDERUNG UND WIRTSCHAFTSENTWICKLUNG IN LÄNDLICHEN GEBIETEN PROBLEME UND AUSSICHTEN IM LÄNDLICHEN AFRIKA

Dieses Referat behandelt:

- Das Konzept der Erreichbarkeit im ländlichen Raum und seine Bedeutung für die Entwicklung ländlicher Gebiete
- Ergebnisse der Pilotprojekte im Bereich Verkehr & Beförderung in ländlichen Gebieten in Malawi und Simbabwe
- Die wichtigsten Probleme im ländlichen Afrika in bezug auf die „Erreichbarkeit“ im ländlichen Raum
- Mögliche Lösungen für Probleme in Zusammenhang mit der Erreichbarkeit im ländlichen Raum durch adäquate lokale Planung und verbesserte Mobilität. Schwerpunkt auf dem nicht-motorisierten Verkehr.

Die obigen Themen stellen für die konventionellen Ansätze im Bereich des ländlichen Verkehrswesens, die sich auf Straßen und motorisierte Fahrzeuge konzentrieren, eine Herausforderung dar. Die Betonung liegt auf dem wachsenden Bewußtsein Afrikas bezüglich der Dimensionen der Verkehrsbelastung, die ländliche Gemeinden auf sich nehmen, um ihre Grundbedürfnisse zu decken, sowie in bezug auf das Ausmaß, in dem dadurch ihre soziale und wirtschaftliche Entwicklung verhindert wird.

POTOVANJE IN PREVOZ NA PODEŽELJU (RTT) IN EKONOMSKI RAZVOJ IN MOŽNOSTI NA AFRIŠKEM PODEŽELJU

Navedeni članek zajema:

- koncept dostopnosti podeželja in njena pomembnost pri razvoju podeželja
- odkritja s projektov RTT, narejenih v državah Malavi in Zimbabve
- ključni problemi podeželskih predelov v Afriki zaradi njihove dostopnosti
- možne rešitve dostopa s pomočjo pravilnega lokalnega načrtovanja in izboljšanja mobilnosti; poudarek na nemotorizirani prevozu

Navedeni predmeti predstavljajo izziv konvencionalnim pristopom poljedeljskega transporta s poudarkom na cestah in motornih vozilih. Poudarek je na porajajoči se zavesti v Afriki o obsegu transportnega bremena, h kateremu prispevajo tudi poljedelske skupnosti, da bi zadovoljile svoje osnovne potrebe, in na stopnji, do katere breme transporta ovira njihov družbeni in ekonomski razvoj.

ENGLISH

DEUTSCH

SLOVENSKO

RURAL TRAVEL AND TRANSPORT (RTT) AND ECONOMIC DEVELOPMENT PROBLEMS AND PROSPECT IN RURAL AFRICA: EXAMPLES OF MALAWI & ZIMBABWE

I. INTRODUCTION

As close as a decade ago, it was widely believed that roads could catalyse rural development if there were enough good roads to ensure access to inputs and evacuate agricultural surpluses to markets. Consequently, rural transport planning directed large amounts of investment aimed at rural development towards providing roads. The failure of this strategy to make a felt impact on rural development inspite of massive investment, led to research efforts to understand what was actually taken place.

The findings of several studies carried out in Africa and Asia show that people move around in rural areas for a variety of reasons which range from subsistence to socio-economic needs. The largest transport burden on households often takes place within the village, mostly required for the transport of water and firewood. This burden is often head and hand carried by women. Foot paths and foot bridges are the transport infrastructure often used by rural households; mostly on foot and occasionally with animal drawn carts and bicycles for the economically more fortunate ones. Availability of means of transport and of transport services condition the movement of goods into and out of communities. When facilities for basic services are difficult to reach, the time and efforts to go and get them takes away the time needed for other productive and social activities. Consequently, the household would experience labour shortages at critical times in agriculture calendar and in other economic sectors. Lack of access not only produces isolation, it actually becomes as a real constraint on productive activities and contributes to factors that cause poverty.

II. RURAL TRANSPORT DEFINED IN TERMS OF PROVISION OF ACCESS

The studies give an insight into ways in which transport can be seen as a "facilitator" and as part of a coherent and integrated set of measures to contribute to economic and social development. The heart of the problem is "accessibility" that encompasses both "mobility" of people and "locations" of different services/facilities. Accessibility is hence, defined in terms of provision of access and the ease (expressed in spent time, efforts and cost) with which a need can be satisfied. Hence, a more appropriate definition for transport is "the movement of people and goods by any conceivable means for any conceivable purposes".

III. LINKAGES BETWEEN RURAL ACCESS, POVERTY AND DEVELOPMENT: SITUATION IN SUB-SAHARAN AFRICA

Almost a third of people in developing countries live in poverty and their poverty is reflected in some basic indicators of lack of access to basic services. The World Bank studies have shown a clear association between poor access to basic services and per capita income. Poor access is one of the characteristics of poverty and it has its effects at the most basic level of living. Lack of access to basic and social services, employment, technology, land, information, credit, ..etc. contributes to factors such as poor health, low skill, poor education, low investment and limited opportunities; leading to low productivity and income that in turn, perpetuate the vicious circle of poverty and hinders economic development.

The 1995 Human Development Report of the UNDP and the 1996 World Development Report of the World Bank indicate that in Sub-Saharan Africa, with the population of 572 millions and average GNP per capita income of US\$ 460, the access to health services is 54.9%, to safe water is 56% and to sanitation is only 36%. Poor access to basic services contributes to infant mortality rate of 92 per 1000 live birth and a life expectancy of 51.3 years in these countries. These access problems are even worse in rural areas of Africa where 90% of the Africa's poor lives. Only 49% of the rural population in sub-Saharan Africa have access to health services, 35% to safe water and 29% to sanitation. These figures are 78%, 73% and 59% for urban population respectively.

There is no doubt that transport is a key element in the process of economic and social development. However, it is crucial to be clear about the form in which the transport is made available - to whom, by whom and the extent that it is integrated into the development process. Since early 1980s there has been a great deal of evidence to suggest that the major investment programmes in rural roads have not achieved the hoped for increases in agricultural production and

in living standards of rural population.

The UN Commission on Human Settlements (Habitat) in its 1982 reports indicates that "...the ability of the poor to engage in economic activities is limited by inadequate facilities and services and is generally hindered by current transport policies". The current rural transport policies should be reformulated to reflect the actual needs and transport pattern of rural population. Thus, it is necessary to look closer at the access needs and priorities of the rural population and to develop a co-ordinated, integrated set of interventions to meet their needs.

IV. RURAL ACCESSIBILITY PLANNING

To improve rural access effectively, an appropriate (simple and relatively cheap) planning tool has been developed, with the ILO technical assistance, through pilot projects in Asia and Africa that involves communities and local organisations to identify their access problems and propose solutions for improvement of their access to services and facilities. The Rural Accessibility Planning focuses on the poor access measured in terms of the time spent to get access. Because of poor access a lot of time is being wasted by rural households to transport themselves and their goods in order to meet their needs. The underlying principal of accessibility planning is to reduce this wasted time, hence have more time available for other social and economic activities.

The first stage of Accessibility Planning is to carry out a situation analysis that identifies the access problems in target areas; both regarding the mobility of the population and the location of services and facilities. The local communities, organisations (government and NGOs) and individuals are involved in this process in terms of providing the needed information and carrying out the survey. This information is processed to produce the access profiles of target areas. The access profiles are discussed in a workshop with the target local communities and organisations in order to prioritise the access problems and find different options to solve those problems. The same local communities and organisation are involved not only in planning but also participate and contribute to implementation and maintenance of what has been planned.

V. GENDER AND RURAL ACCESS

Studies carried out by the World Bank and ILO over the last decade in Africa (Ghana, Zambia, Tanzania, Burkina Faso, Malawi and Zimbabwe) have provided detailed insights into both access problems and the corresponding magnitude and distribution of the transport workload among rural households. In general, the transport responsibilities of women and men are quite separate, being influenced by culture, custom and the overall household responsibilities. Transport consumes a major part of the household's time and involves major physical burden.

In Africa in particular, women's traditional role as the bearers of loads often means that they are saddled with a huge transport burden. This is particularly evident in female headed households which tend to be the poorest. It is also suggested as one of the reasons for young girls dropping out of school in higher numbers than boys. Studies carried out in the above mentioned countries show that the female contribution to household transport in rural areas ranges from 75 to 85% of the total transport burden.

One approach in reducing the above mentioned transport burden is to involve women in local level planning process and take account of the clear distinction between the sexes in terms of transport needs and patterns. In doing so, the women's perspective and needs will be incorporated into the planned interventions and the burden of transport may be reduced for both sexes.

Equally important is making note of the access interventions that address specific needs of women such as providing a better access to women for intermediate means of transport through a better access to credits and a more gender sensitive design for means of transport. This is because traditionally, women's access to any form of intermediate means of transport has been limited by their role in the households, their lack of access to money and often by cultural restrictions.

In general, interventions which reduce the transport burden by bringing basic services such as water supply and health clinics closer to the users, and affordable means of transport that are suitable to women and their daily works are more likely to reduce their transport burden.

VI. EXAMPLES OF MALAWI AND ZIMBABWE

VI.1 MALAWI

Malawi is classified as a least developed country with an estimated GNP annual per capita of US\$ 230 in 1995. The transport sector has consistently been the high priority in development planning in Malawi, accounting for up to 30% of public sector investment. The emphasis in road investment has been on primary routes and not much for rural infrastructure such as footpaths, tracks and bridges which are used by over 80% of the rural population in Malawi.

Motorised transport services are concentrated in and around large urban centers and on long distance main routes. Local level and medium range transport services for goods and passenger around rural centers to supply the district level needs, are seriously limited. The problems in having limited rural transport services are compounded by the limited availability of the Non-Motorised means of Transport (NMT) such as bicycles, bicycle trailers, animal drawn carts, pack animals, wheelbarrows and water carrying devices in the rural areas. This is caused by the high retail cost and lack of credit facilities to purchase these intermediate means of transport.

The majority of rural people spend long hours (3,300 hours per household per year) and walk long distances to reach the crop marketing points, farm input supply centers, health clinics, schools, grinding mills, sources of water and firewood and other facilities and services that they need in their daily lives. These access problems impede the goal of the Government to make the basic socio-economic services available to the rural population and undermines the efforts to reduce poverty and expand economic opportunities.

In view of the above, the GoM, United Nations Development Programme (UNDP) and ILO engaged in series of consultations during 1988-90 to find a holistic approach that can address the rural accessibility problems in rural Malawi. This effort gave birth to a pilot project with the objective of planning and implementing measures that improve, with an integrated approach, accessibility of rural people to basic social and economic services that facilitate development in target areas. The emphasis was on "mobility" of population through better access to NMT; especially bicycles and bicycles trailers, and improvement of rural infrastructure. This project was completed in 1977 with successful results that included better access to and availability of NMT (focusing on bicycles and bicycles trailers), improved rural infrastructure and better capacity at the local level for planning and implementation.

VI.2 ZIMBABWE

Although Zimbabwe with a population of 11 million and per capita GNP of US\$ 629 is considered a relatively industrialised country in Sub-Saharan Africa, a large proportion of its population (72%) still lives in rural areas. The investment in transport sector is similar to the pattern in Malawi and the motorised transport services follow the same trend. The use of NMT is limited in rural areas due to the high retail cost, poor maintenance, lack of available and affordable spare parts, difficulty in getting credits and poor rural infrastructure.

In 1997 the Government of Zimbabwe completed a Rural Transport Study (RTS) that examined the travel and transport burden on rural households, with a view to reassessing rural needs in light of the broader issue of accessibility. The RTS, undertaken in co-operation with the ILO and financial support from the Swedish International Development Co-operation Agency, was carried out in three of the country's 57 districts. The survey identified a number of problems similar in character to those found in Malawi and other rural communities across Africa.

It was made clear that walking and head loading - not motorised movement - is the primary mode of transport in the rural areas. An average rural household spends between 60 and 70 hours a week gaining access to water, firewood, grinding mills, markets, clinics and schools. Most of this is done by walking and head loading (77% of which is borne by women).

It became apparent that most rural transport and travel - as well as the needs associated with them - are focused within and around villages. Therefore, the availability of formal roads does not appear to be the key factor in determining rural transport patterns and levels of community access to services. The proximity of those services is rated by rural people as being much more significant. The study showed that a great deal of time (3,200 hours per household per year) is being wasted in getting access to basic daily needs due to poor mobility and inconvenient location of services.

In general, the RTS results underlined that poor access reduces the effectiveness of services in reaching communities. It deepens the "isolation" of rural households, undermining their opportunities for better education, health facilities, job opportunities, markets - and better income. On the other hand, the RTS found that the efficiency, productivity and quality of life in rural communities could be greatly enhanced by improving access, through the better location of services and facilities, the development of rural infrastructure, improvement of mobility and NMT maintenance and other interventions aimed at reducing the need for travel and transport. The RTS has been followed by projects that include activities aiming at "mobility" of rural population through better access to NMT and improved rural infrastructure.

VII. FINDINGS OF EXPERIENCES IN MALAWI & ZIMBABWE ON "MOBILITY"

- The lack of accessibility to basic goods and services is a constraint to rural development and contributes to the low productivity of land and labour observed in rural areas. The above mentioned experiences, through proper local planning and appropriate interventions that improves rural access, offers a viable tool to meet this constraint and contributes to poverty alleviation efforts and development in rural areas.
- A conducive environment to provide appropriate, affordable and sustainable Intermediate Means of Transport and credit scheme to improve mobility, offer the rural households and small holder farmers more time and options for productive works and better livings.
- National transport policies must be inclusive of rural transport issues relevant to needs and requirement of rural population in order to support and complement the local efforts for economic development in rural areas.
- The private sector, small scale entrepreneurs and local companies, should be provided a conducive environment within which they can operate and complement the efforts of rural communities regarding the needed skills and supply of NMT that improves rural mobility.
- There is a felt need for research to find appropriate designs of NMT suitable for the daily needs of rural population; women in particular. There are already, prototype designs developed for bicycle ambulances (pilot project in Kenya), bicycle trailers for different loads and purposes; addressing the rural needs for short distance trips. However, more work is needed to expand the range of these designs and move from pilot projects to a higher level where they can be commercially marketed at prices affordable and accessible to rural population.
- It is important to increase/strengthen the technical and institutional capacity in the rural areas to guide and assist the local communities for interventions that improve their access to basic needs and socio-economic facilities/services.

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FORGING CYCLE LINKS BETWEEN TWO MAJOR CITIES IN SCOTLAND (GLASGOW AND EDINBURGH).

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ENGLISH FORGING CYCLE LINKS BETWEEN TWO MAJOR CITIES IN SCOTLAND (GLASGOW AND EDINBURGH).

For many years the bicycle was under-rated and under-used in Scotland. However, since the mid 1980's recognition of the role of cycling has grown. In 1996 a target to quadruple Scottish cycle use by 2010 was adopted. Cycling is now being actively encouraged.

Central Scotland is densely populated and has highly developed transport networks. Until now, though, it has lacked long distance cycle routes. Two such routes will be in place by 2001.

Both new cross-Scotland cycle routes will link west and east coasts via both Glasgow and Edinburgh. The first 125 km link, from Greenock to Leith, is part of the 3,870 km Millennium Cycle Network. The second link will follow the towpath of the Forth and Clyde and Union canals and is part of a project to re-open the canals to navigation. The two routes will cross and inter-link in several places.

The new routes offer considerable potential for increasing cycling in central Scotland. They open up the possibilities of safe recreational cycling to the 253,000 people who live within 1km of the routes. Simultaneously they create many opportunities for commuting, shopping or trips to school by bike.

Implementation of the routes requires wide ranging partnerships. The Greenock to Leith link is being co-ordinated by 'Sustrans', while the canal route is being steered by British Waterways. The links run through 12 Council areas and are being supported and funded by all. In addition major funding is coming from the 'Millennium Commission' and the European Union, with some commercially funded sections. British Waterways is a major funder of the canal route.

DEUTSCH

These exciting projects highlight the importance of cycling as part of an integrated transport strategy, and the crucial role of partnership in forging new routes across Scotland.

SCHAFFUNG VON VERBINDUNGEN ZWISCHEN DEN WICHTIGSTEN STÄDTEN SCHOTTLANDS (EDINBURGH UND GLASGOW)

Das Fahrrad wurde in Schottland jahrelang unterschätzt und vernachlässigt. Seit Mitte der 80er Jahre wird jedoch die Bedeutung des Fahrradverkehrs zunehmend anerkannt. 1996 setzte man sich das Ziel, bis 2010 den Fahrradverkehr in Schottland zu vervierfachen. Das Radfahren wird jetzt aktiv gefördert.

Mittelschottland ist dicht besiedelt und verfügt über hochentwickelte Verkehrsnetze. Bisher fehlen jedoch

Radwanderstrecken. Zwei solcher Strecken werden 2001 fertiggestellt sein.

Die beiden neuen Radstrecken durch Schottland werden die West- und Ostküste via Glasgow und Edinburgh verbinden. Die erste 125 km lange Verbindung von Greenock nach Leith ist Teil des 3870 km langen Millennium Cycle Network. Die zweite Verbindung wird den Leinpfaden der Forth-, Clyde- und Union-Kanäle folgen und ist Teil eines Projekts, in dessen Rahmen die Kanäle wieder für den Wasserverkehr geöffnet werden sollen. Die beiden Routen werden sich an mehreren Stellen kreuzen.

Die neuen Routen bieten ein beträchtliches Potential für die Steigerung des Fahrradverkehrs in Mittelschottland. Sie bieten den 253.000 Menschen, die innerhalb eines Einzugsgebiets von 1 km entlang der beiden Routen wohnen, die Möglichkeit zu sicherem Radfahren in der Freizeit. Gleichzeitig bieten sie viele Gelegenheiten für Pendler, Einkaufsfahrten und den Weg zur Schule.

Die Implementierung der Routen erfordert umfangreiche Partnerschaften. Die Verbindung zwischen Greenock und Leith wird von Sustrans koordiniert, während die Kanalroute von den British Waterways betreut wird. Die Verbindungen verlaufen durch 12 Gemeindegebiete und werden von allen unterstützt und finanziert. Zusätzlich wird von der Millennium Commission und der Europäischen Union finanzielle Unterstützung gewährt, und einige Abschnitte werden auf kommerzieller Basis finanziert. British Waterways ist einer der Hauptsponsoren der Kanalroute.

Diese aufregenden Projekte unterstreichen, wie wichtig das Radfahren als Teil einer integrierten Verkehrsstrategie ist, und zeigen, welche entscheidende Rolle Partnerschaften für die Schaffung neuer Routen quer durch Schottland spielen.

VLOGA KOLES V OKVIRU INTEGRIRANEGA TRANSPORTA - UTIRANJE POTI ZA POVEZAVO GLAVNIH ŠKOTSKIH MEST EDINBURGHA IN GLASGOWA

Veliko let je bilo kolo na Škotskem podcenjeno in malo uporabljano. Vendar se je od leta 1980 pomen kolesarjenja povečal. Leta 1996 je bil sprejet cilj, da se do leta 2010 štirikratno poveča uporaba koles. Zato se zdaj kolesarjenje dejavno vzpodbuja.

Osrednja Škotska je gosto poseljena in ima visoko razvite transportne mreže. Vendar ji je doslej primanjkovalo dolgih kolesarskih poti. Do leta 2001 bosta zastavljeni dve taki poti.

Obe kolesarski poti po Škotski bosta povezovali zahodno in vzhodno obalo preko obeh mest, Glasgowa in Edinburgha. Prva povezava, dolga 125km, ki poteka od Greenocka do Leitha, je del 3.870km dolge mreže Millenium Cycle Network. Druga bo sledila vlečni poti kanalov Forth, Clyde in Union in je del projekta, ki bi ponovno odprl kanale za navigacijo. Obe poti se bosta križali in sovpadali na več mestih.

Novi poti nudita znaten potencial za pospešitev kolesarjenja v osrednji Škotski. Odpirata tudi možnosti za varno rekreativno kolesarjenje vsem 253.000 ljudem, ki živijo na območju 1km oddaljenosti od obeh poti. Istočasno ustvarjata možnosti za prevoz na delo, nakupovanje ali izlete v šolo s kolesom.

Vključitev poti zahteva obsežno sodelovanje Povezavo Greenock - Leith koordinira Sustrans, medtem ko kanalne poti "krmari" podjetje British Waterways. Poti potekata po 12 okrožjih in ju vsa okrožja finančno in idejno podpirajo. Razen tega prispevata večji delež družba Millenium Comission in EU z nekaj komercialno podprtimi sekcijami. Glavni sponzor kanalske poti je družba British Waterways.

Ti vznemirljivi projekti izpostavljajo pomembnost kolesarjenja kot dela strategije integriranega transporta in odločilno vlogo partnerstva pri utiranju novih poti po Škotski.

THE ROLE OF BICYCLES WITHIN AN INTEGRATED TRANSPORT POLICY. FORGING LINKS BETWEEN SCOTLAND'S PRINCIPAL CITIES (EDINBURGH AND GLASGOW).

INTRODUCTION

The Cities of Edinburgh and Glasgow are Scotland's Capital and main commercial centre respectively. They are situated within Central Scotland, with Edinburgh in the east and Glasgow in the west. Central Scotland has a population of 2,715,960. This represents 53% of the total population of Scotland within 7% of the area of the country. This is a very high population density in a very small area of a largely rural country. (506 people / Km².) In this area too is the largest concentration of industry and commerce within Scotland.

THE FRAMEWORK.

Since the middle of the 1980's it has been recognised that sustainable transport offers a solution to the exponential increase in traffic congestion and pollution and that cycling forms an important part of any integrated and sustainable transport strategy. It has also been recognised that for many years the bicycle has been underrated and under-used in Scotland, as it is in the majority of the United Kingdom, as a form of transport for journeys to work or school, or as part of a multi-modal journey such as cycle or walk to the bus or train station. Cycling needs to be promoted as an environmentally friendly and sustainable mode of transport, especially to the workplace or school, which does not cause congestion or pollution and has the added benefit of improving levels of fitness and therefore overall health and general well-being. A major step towards converting the recognition of cycling's role into policy change was the publication by Central Government in September 1998 of a Transport White Paper (policy statement) entitled Travel Choices for Scotland, setting out an integrated transport policy. The White Paper endorsed the 1996 National Cycling Strategy.

In the words used in the White Paper:- We (the Government) see an integrated transport policy encompassing:-

- Integration within and between different modes of transport - so that each contributes its full potential and people and goods can move easily between them;
- integration of transport with the environment - so that our transport choices support a better environment;
- integration between transport and land-use planning - at the Scotland and local level, so that the two work together to support more sustainable travel choices and reduce the need to travel;
- integration of transport and our policies for education, health and wealth creation - to make a fairer, more inclusive society.

The main emphasis of this is sustainable development - "which meets the needs of the present without compromising the ability of future generations to meet their own needs".

Sustainable development and transport are inherently linked and transport is fundamental to economic activity in Scotland. It is of major social concern in determining the access different communities enjoy to jobs, services and leisure; and has a growing environmental impact. The growth of traffic and the continually increasing expectations of personal mobility are placing strains on both the road network and the natural environment. Transportation consumes growing amounts of fuel and contributes to an increasing amount of air pollution. Road related developments are putting growing pressure on greenfield sites. At the same time those people who do not have access to a car (approximately 40% of households in Scotland) are increasingly denied access to the range of jobs, shops, and recreation that, at present, can only be accessed by car.

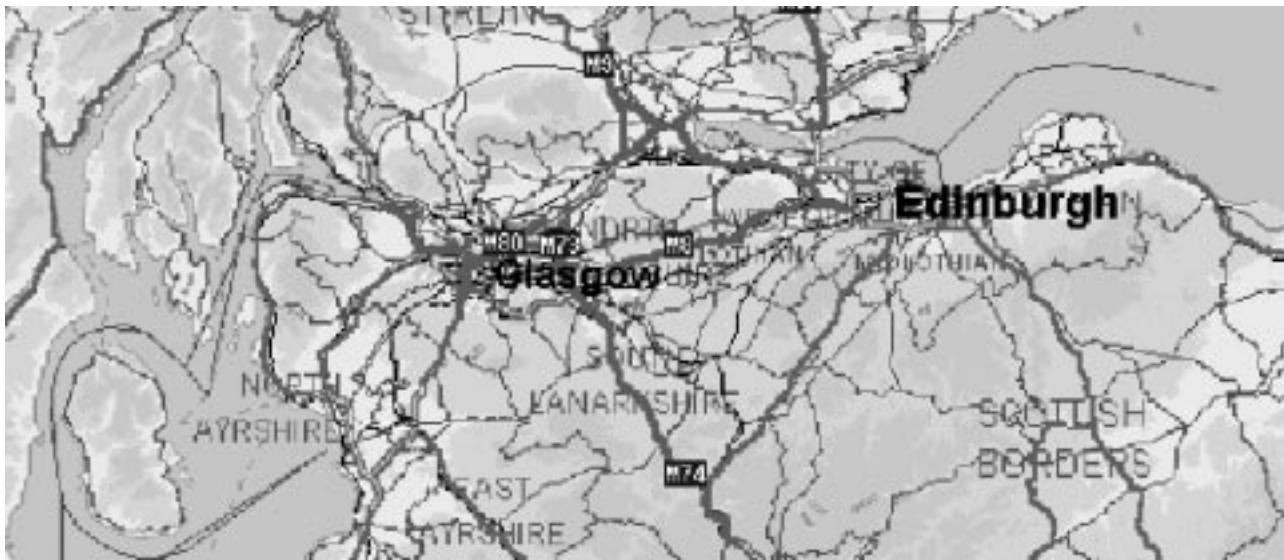


Figure 1 Main Transport Links in Central Scotland

THE EFFECT OF FUTURE GOVERNMENT POLICY ON CENTRAL SCOTLAND.

In Central Scotland there exists a sophisticated transport network with major road links, rail links and international air links. However the level of cycle use is very low with around 0.5% to 5% of journeys to work made by cycle. If this percentage is to be increased the effects upon cyclists must be considered from the outset in traffic management, road improvement schemes or new developments.

Therefore cognisance should be given to **the road transport hierarchy**: -

1. Walking.
2. Cycling.
3. Public Transport.
4. Freight by road.
5. Cars.

which gives the first priority to walking followed by cycling and recognises the necessity to restrict the use of cars.

The Scottish white paper addresses the promotion of cycling (as with walking) as an alternative to the car for short journeys. A partnership between public transport and cycling is also addressed, as this will produce a competitive alternative to the car for longer trips. Passenger Transport Authorities and Local Authorities should work with public transport operators to integrate the bicycle with public transport. Journeys by bicycle to and from bus or rail stations should be an integral part in the planning of any cycle network. As far as possible these should lead cyclists to the public transport interchanges.

Cycle parking facilities at Bike and Ride locations include security, convenient access, weather protection, and good lighting and signing. A combination of these variables will encourage use of facilities.

Carriage of bicycles on bus and trains is important in urban areas and on services which cater for rural and recreational cycling areas. Carriage of bicycles by Bus/Coach especially Express and long distance services should be investigated, promoted and provided by the operating company. Free cycle carriage can increase passenger revenue, thus is of potential benefit to the cyclist and operator. The Royal Commission on Environmental Pollution recommended that rail operators should be required to provide adequate space for cycles on all passenger services. (Bicycles are carried free on all Strathclyde Passenger Transport Authority supported rail services). By providing an area of flexible space, operators can cater for bicycles, other bulky luggage and seated passengers according to demand. The value of such provision is enhanced where Bike and Ride facilities are available to complement it.

LONG DISTANCE CYCLE ROUTES

By the nature of cycling, most bicycle trips will be local. However the creation of a national network of long distance cycle routes is an important component any strategy to promote cycling. These routes tend, by their nature to give good opportunities for recreational cycling, which offers a valuable means of re-introducing cycling to a population which has largely abandoned this means of travel.

To maximise the impact of long distance routes, the routes need to give particular attention to serving the major towns and cities of the central belt.

The development of a national cycle network in the UK is currently being led by Sustrans, a charity dedicated to the promotion of cycling and walking through the provision of safer infrastructure. Arguably there is a need for central Government to accept the responsibility for providing this network. However at present the majority of funding comes via Local Authorities, through Sustrans and the Millennium Commission. The latter which distributes National Lottery funds, is meeting around 20% of the total £200M cost of the national cycle network.

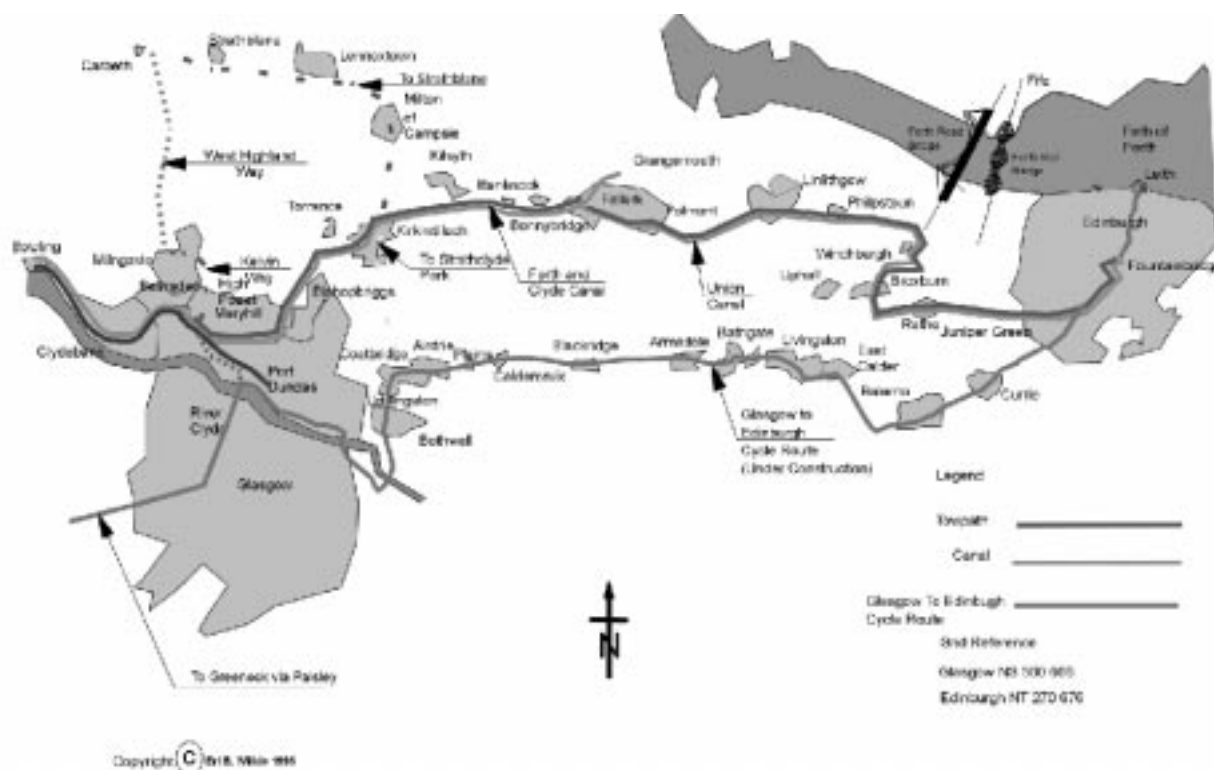


Figure 2 Long Distance Cycle Routes in Central Scotland.

LONG DISTANCE CYCLE ROUTES IN CENTRAL SCOTLAND.

As a part of the Transport Network there are two designated long distance cycle routes in Central Scotland. The first between Greenock on the River Clyde Estuary in the west of the country and the City of Edinburgh on the River Forth in the east, also passing through the City of Glasgow en route, is currently being constructed. This is part of the Sustrans National cycle network, which is a Millennium Project, part funded by the National Lottery. Although it has a predominantly leisure and recreational purpose it joins together vast areas of urban conurbation, towns and villages, which also makes it ideal as a commuter route in continuous short stretches along its length. It begins or ends in Leith less than 500m from the Scottish Office and passes through the heart of both Edinburgh and Glasgow. From Bathgate midway between the two cities the route uses the track bed of the disused Glasgow to Bathgate railway track, for 24km, to Drumgelloch Railway Station, before reverting to an urban environment through Coatbridge, Glasgow and Paisley. The off-road stretches which form the major part of this long distance cycle route have been, or will be, constructed by Sustrans Scotland.

The second of these routes is the tow paths of the Scottish Lowland Canals which are the Forth and Clyde and Union Canals. This is part of another millennium project to upgrade these Canals and make them navigable once again for boats and barges. These historic waterways constructed in the 18th and 19th Century respectively also cross the central belt of Scotland cutting a swathe through the commercial and industrial heartland forming a link between the rivers Clyde and Forth - Atlantic and North Sea. thus forming another link in the chain of the integrated transport strategy. Within this canal redevelopment programme the tow paths are to be upgraded to a standard capable of allowing pedestrians and cyclists alike free passage along their length forming yet another link between Scotland's principal cities.

The project was launched in October 1994. The direct cost of the restoration will be just over £78.3 million. This is being funded by a partnership consisting of the Millennium Commission, Scottish Enterprise National and 5 of the Local Enterprise Companies, the European Regional Development Fund, British Waterways and the 7 local councils through whose area the canals pass.

The Forth and Clyde Canal was completed in 1790 and the Union Canal in 1822. During their period of commercial operation the two canals which were linked together at Falkirk, formed an extremely important transport corridor across central Scotland.

The two canals fell victim to the roads culture of the 1960's when they were closed to navigation and broken up into short sections. A 1.7 km section of the Union Canal at Wester Hailes in Edinburgh was infilled entirely.

Nevertheless, the canals are scheduled ancient monuments and represent a major part of central Scotland's industrial heritage. Furthermore since their closure the natural habitats along the canal have flourished and they are now considered as important wildlife corridors.

The plan is to bring the 110 km (69 miles) of canal and towpath, from Glasgow to Edinburgh and the Forth to the Clyde back to life by the middle of 2001. This will involve the removal of 33 obstructions, dredging, renovation of old locks, reconnecting the link between the 2 canals at Falkirk, repairing the banks and improving the towpath. The most exciting element of this will be the creation of a 25m high wheel at Falkirk for transporting the boats from the level of one canal to the other.

The works started in August 1998 at sites to the north and west of Glasgow on the Forth and Clyde Canal and between the M8 and A801 between Edinburgh and Falkirk on the Union Canal. The last project to be complete is likely to be the new Wheel at Falkirk which will connect the two canals.

The completion of these two projects will provide economic benefits to the community and to Scotland as a whole in two ways. Firstly jobs and investment created directly from the engineering works and environmental improvements associated with the projects. Secondly, and most importantly, the initiatives will act as a catalyst for new developments and tourist projects right across central Scotland, leading to further employment and commercial opportunities.

Economic studies have shown that the Millennium Link project should ultimately create 4110 new additional full time equivalent jobs, net of all displacement and £24 million a year from visitors spending money in the local economy. Walking and cycling visitors to the canals are forecast to increase by 3.5 million over 5 years.

The projects have many other benefits not least the increased opportunities that will be created through the project for local people to enjoy the amenity of the cycle and walking routes, schools to use them for educational projects and the overall improvements in the environment of the routes which will benefit people and wildlife alike.

CONCLUSION.

It is only by introducing an integrated transport policy, which the new Government of Scotland sees as a priority, that sustainability will be achieved and walking and cycling will begin to reach their rightful place at the top of a 21st century transport hierarchy. It would be foolish to ignore the inevitable consequences of unrestricted car use, therefore together with this fundamental change in Government Transport policy long-term behavioural changes are needed. To this end it is particularly important to develop Safer Routes to School and Green Commuter plans within workplaces throughout Scotland.

By targeting these groups and demonstrating to them a clear pattern of improved health through increased walking and cycling it is hoped that the awareness of the public, the Government, Industry and Commerce will be raised in respect of the benefits of improved health. It is also hoped that the provision of a National Cycle network both urban and rural will make a positive contribution towards a safer, more active and healthy society in the second millennium. The evidence collated to date shows that we must act now! To delay would be to negate our responsibility towards future generations in respect of their safety, health and environment.

THE NOTTINGHAM CYCLE-FRIENDLY EMPLOYER PROJECT

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THE NOTTINGHAM CYCLE-FRIENDLY EMPLOYER PROJECT

This paper will examine the results of an initiative involving eight large employers in Greater Nottingham to encourage cycle use for work journeying. It involves over 36 000 workers, and an investment of nearly half a million pounds in incentives and infrastructure to facilitate cycle use for journeys to/from and during the course of work. The paper will examine how investment decisions were made, and how effective the various measures have been. It will also look at the reasons for employer involvement, and how any problems which arose were overcome. Finally, the paper will draw conclusions about the overall success of the project, and will identify what else needs to be done to further increase the modal share of cycling for work journeying in urban areas.

DAS PROJEKT DER FAHRRADFREUNDLICHEN ARBEITGEBER IN NOTTINGHAM

Dieses Referat untersucht die Ergebnisse einer Initiative zur Förderung des Fahrrads als Verkehrsmittel für den Weg zur Arbeit, an der sich acht große Arbeitgeber in Nottingham und Umgebung beteiligten. Es geht dabei um mehr als 36000 Arbeitnehmer und eine Investition in der Höhe von beinahe einer halben Million Pfund für Anreize und Infrastruktur, die den Gebrauch des Fahrrads für den Weg zur Arbeit sowie während der Arbeit erleichtern sollen. Das Referat wird analysieren, wie die Investitionsentscheidungen getroffen wurden und wie effizient die verschiedenen Maßnahmen waren. Außerdem werden die Gründe der Arbeitnehmer, sich in diesem Bereich zu engagieren, beleuchtet, und es wird festgestellt, wie die auftauchenden Probleme bewältigt wurden. Schließlich zieht das Referat Schlüsse bezüglich des Gesamterfolgs des Projekts und gibt Auskunft, was noch getan werden muß, um den Umstieg auf das Fahrrad für den Weg zur Arbeit in städtischen Bereichen weiter zu fördern.

NOTTINGHAMSKI KOLESARSTVU PRIJAZEN SLUŽBENI PROJEKT

Referat predstavlja ugotovitve poskusa vključevanja osmih velikih podjetij širšega mesta Nottingham, da bi vzpodbujala potovanje v službo s kolesom. To zajema čez 36.000 delavcev in investicijo v višini skoraj pol milijona funtov za spodbude in infrastrukturo, kar bi omogočilo uporabo koles na poti v službo in iz nje ter v času službe. Referat prikazuje, kako so bile sprejete odločitve v zvezi z investicijami in kako uspešne so bile različne meritve. Prikazani so tudi razlogi, ki so bili merodajni za podjetja pri njihovi vključitvi ter kako so bili rešeni morebitni problemi. Na koncu predstavlja referat zaključke o splošnem uspehu projekta in označuje, kaj še je potrebno narediti, da bi se v urbanih naseljih delež kolesarjenja v službo povečal.

CYCLE CHALLENGE: A CASE STUDY OF THE NOTTINGHAM CYCLE-FRIENDLY EMPLOYERS PROJECT

INTRODUCTION

The Nottingham Cycle-Friendly Employers Project was initiated in response to a UK Central Government-funded programme - Cycle Challenge - which was set up in July 1995 by the then Department of Transport (DoT), now the Department of the Environment, Transport and the Regions (DETR). In brief, the DoT invited groups throughout England to put forward schemes for support from a £2 million Cycle Challenge budget. The aim of the schemes would be to promote and facilitate cycling for local journeys - such as to work, the shops, to school and for social visits - while the DoT's overall objective was to reduce car use for short trips, and thereby cut congestion and pollution.

Cycle Challenge generated some 230 bids, and the 62 successful projects were announced in October 1995. These ranged from a bicycle trailer scheme for Safeway supermarket customers; various initiatives to facilitate better integration between bikes and buses and bikes and trains; schemes to promote cycling to schools; town centre cycle parking and repair stations; and cycling and health promotional campaigns. Nottingham's Cycle-Friendly Employers Project received £225 000 from the Cycle Challenge budget, the second largest award. The involvement of groups representing the public, private and voluntary sectors - together with a commitment to match the Cycle Challenge grant with local funds - were crucial to the success of the Nottingham bid.

WHAT IS NOTTINGHAM'S CYCLE CHALLENGE?

The objective of the Nottingham Cycle-Friendly Employers Project was to increase the extent to which people cycle for commuting journeys, and for official work trips such as site visits. The project officially commenced in April 1996, when funding from the DoT was released, and was to run for approximately two years. The first year would see the implementation of the scheme, the second would focus on monitoring and evaluation. In the event, both implementation and evaluation have taken longer than envisaged, and the final report on the Nottingham project is still under preparation.

Eight large employers in the city are involved as the project partners, these are: Nottingham City Council, Nottinghamshire County Council, the University of Nottingham, Nottingham Trent University, Queens Medical Centre (QMC) - a large general and teaching hospital, Clarendon College - a centre for further education, the Boots Company - the city's largest employer with its head offices in Nottingham, and Experian (formerly CCN) - a credit referencing agency. Between them, they employ over 32 000 people, and if students are included the numbers using the sites (and thus potentially targeted by the scheme) rise to around 77 000.

The eight employers introduced a variety of incentives to facilitate cycling among their employees; these include combinations of the following.

- * Workplace showering and changing facilities: both male and female if appropriate.
- * Secure cycle parking at the workplace: such as cycle lockers and communal cages, 'Sheffield' stands, and shelters offering weather protection.
- * Cycle mileage allowances for short journeys on official business.
- * Interest-free loans of up to £500: repayable over two years, for the purchase of bikes and equipment.
- * Purchase of company 'pool' bikes: these are for communal use for short official business trips and site visits among employees who do not own a bicycle, or don't have one at work.
- * Publicity and information material: endorsing the personal and environmental health benefits of cycling, as well as the accessibility and appropriateness of this means of transport for local journeys.
- * Promotional events: such as bikers' breakfasts, bikers' Bar-B-Q's, and bike-to-work days.
- * The establishment of Bicycle User Groups (BUGs): to advise on the measures required to promote cycle commuting, and to provide feedback on the effectiveness of measures once implemented.

Each Cycle Challenge partner implemented a package of cycling incentives tailored to their individual needs and constraints. Most of the project partners consulted their employees on how the Cycle Challenge money should be invested: this was achieved through a combination of staff travel surveys, news letters, E-mail and discussion groups. Those partners that set up Bicycle User Groups (BUGs) - comprising existing and potential cycle commuters - found them very useful in identifying the most effective focus for investment.

In addition to the Cycle Challenge 'partners' there were three supporting organisations involved in the Nottingham Cycle-Friendly Employers Project.

- * Pedals, the City's cycle campaign group. Pedals offered support and advice on the project generally, and commissioned a feasibility study for a city-centre One-Stop Cycle Shop facility. The 'Bikestop' would provide cycle parking, showers, refreshments and repairs for a small daily charge - aimed particularly at commuters who do not have such workplace facilities.
- * Nottingham Green Partnership. This is an existing alliance of public, private and voluntary sector bodies in the city which, directs and financially supports green initiatives. The Green Partnership funded general publicity material for the Nottingham Cycle-Friendly Employers Project.
- * Cleary Hughes Associates. A Nottingham based firm of cycle planning consultants, who are undertaking the monitoring and evaluation of the project.

SCOPE FOR SUCCESS

For a variety of reasons, Nottingham offers a favourable location for the promotion of cycling for work journeys. It is a relatively compact conurbation of around 450 000 people, with many residential areas within a five-mile (8km) radius of the city centre. Thus, many journeys to work are within reasonable cycling distance: approximately two-thirds are less than two miles (just over 3km), and three-quarters less than five miles (8km). A good proportion of the urban area, particularly to the south and west, is fairly flat and has a relatively extensive network of cycle routes and facilities based on popular commuting desire lines. Recent public transport developments have facilitated greater integration between public transport and cycling. The local authorities, Nottingham City and Nottinghamshire County councils, who between them shape transport and planning issues over the Greater Nottingham area, are generally sympathetic to the needs of cyclists and are keen to encourage alternatives to the private car for travel, particularly in the urban areas. Nottingham also has, as already noted, a very active cycle campaign group, Pedals, which with some 400 members is able to offer practical advice from the users' perspective, and lend grass-roots support for efforts to promote cycling.

WHY HAVE EMPLOYERS GOT INVOLVED?

Three main reasons have been identified for the involvement of the eight partners in the Nottingham Cycle-Friendly Employers Project, which has, after all, demanded a clear commitment of time and resources from them.

- * Employer benefits. With the ever increasing demand for workplace parking spaces, which can rarely be satisfied and are costly to provide, the partners can see a long-term financial benefit in increasing the proportion of their work force who commute by bike: cycle parking is far more space-efficient. Other advantages of promoting cycle commuting are perceived to be: a 'greener' image for the organisation; and a fitter and healthier work force, leading to less absenteeism through illness.
- * Responding to existing and expressed suppressed demand. Many partners admit that, prior to involvement in this initiative, they received complaints from existing and would-be cyclists about the lack of workplace facilities for them, such as parking, showering and changing facilities.
- * External persuasion or coercion. In some instances the local planning authority has made it a condition of planning permission for expansion or new development by a large employer, that the applicant draw up a commuter plan which demonstrates how they propose to manage staff travel demand.

Despite the varied initial reasons for participation, the experience of involvement in the Nottingham Cycle Challenge project has for most partners been very positive, with an enthusiastic response from employees and favourable publicity. This has led most partners to continue to support and invest in pro-cycling measures even after the deadline for completion of Cycle Challenge funded infrastructure.

LESSONS ARISING FROM IMPLEMENTATION

From experience of Nottingham Cycle-Friendly Employers Project to date, it is evident that there are a number of conditions which, if satisfied, contribute to the smooth implementation and likely success of initiatives to facilitate cycling for work journeying. These include the following:

- * An enthusiastic facilitator within the organisation, who is committed to the project. Such a person need not necessarily be a keen cyclist themselves (although this does help in understanding their needs), but be able and willing to champion the project's objectives, steer through sometimes controversial or unconventional initiatives, and deal with any awkward questions or unhelpful media attention.
- * A forum for discussion and the exchange of ideas between those responsible for implementing measures to facilitate cycling and those who will be making use of them. This provides an opportunity to find out what cyclists and would-be cyclists want, vis-à-vis what is practical; and to offer feedback on initiatives and suggestions on how they could be improved. Workplace Bicycle User Groups (BUGs) have provided a good channel for such communication.
- * The BUGs from different organisations should be encouraged to network to facilitate the exchange of valuable information, ideas and experience - such as on the implementation of appropriate workplace cycle parking, showering and changing facilities.
- * Ensure that the needs of non, but potential, cyclists are taken into account in deciding spending priorities. BUGs will usually comprise existing cyclists, or those with a keen interest in this mode already. What is needed for a broad take-up of cycling for work journeying are the views of the vast majority who have not yet seriously considered cycling, to determine what - if anything - might encourage them to use this means of transport. Promotional events - such as 'bike to work days' and 'bikers' breakfasts' - have proved useful in attracting novice and occasional cyclists.
- * It is important to stress that it's not essential for people to make a complete modal shift to cycling for work journeys. Encouraging employees to make one or two round trips per week by bike, or to commute by bike in the summer, can make a valuable contribution to reducing the overall level of car dependence.
- * A demonstration of commitment from senior management for the project's aims and objectives. This could manifest itself in senior staff themselves cycling for work trips, at least on occasion; or sacrificing reserved car-parking spaces for cycle parking; or at the very least a verbal or written expression of support communicated to all staff members.
- * BUG meetings and newsletters offer a useful opportunity for the exchange of information and ideas between senior management and their cycling commuters, as well as for a show of support from the former for the latter. These channels of communication should also be used to draw local authorities into discussions on the need for wider highway improvements to facilitate cycle commuting.
- * An ability to identify and overcome onerous disincentives to cycle use for work journeys which may arise. One example which has emerged is the condition that City Council workers using a bike for official business must purchase a cycle computer to accurately record the distance travelled before they can claim the 15p/mile (9p/km) allowance. As the cheapest such items cost around £20, potential participants in such a scheme have estimated they must ride over 130 'official' miles (210km) before they even recoup the expenditure on their computer. The City Council is now considering dividing the city area into a simplified system of concentric rings, where a flat mileage rate is paid for journeys cycled within each distance band.
- * Consider permitting greater timekeeping flexibility to those who cycle to work. For example, allowing them to arrive and depart at times which enable them to avoid peak traffic flows, or to honour child escort duties which might take longer on a bike.
- * Promote the accessibility, versatility and benefits of cycling, rather than focusing exclusively on what some might perceive as complications. While many cyclists will undoubtedly welcome the chance to shower and change at work, others might interpret the provision of washing facilities as a disincentive to cycling - i.e. that it is a time-consuming requirement to shower after riding to work. Nottinghamshire County Council is addressing this particular issue by allowing employees who ride to work to 'clock-on' as soon as they arrive and, if they want to shower, they can do this in the firm's time!
- * Sufficient time for the implementation of pro-cycling measure, including consultation on what measures are required. Most Cycle Challenge partners felt that the twelve month implementation period was too short a time to assemble the necessary funds, consult on the focus of investment, secure the necessary permissions to carry out works, and put in place the various initiatives. The larger organisations, with multi-tiered bureaucratic structures, faced the most problems.

THE EFFECTIVENESS OF THE PROJECT

The final report on the effectiveness of the Nottingham Cycle-Friendly Employers' project is still under preparation, although nearing completion. This is due to the fact that some work-place pro-cycling measures took considerably longer to introduce than originally envisaged, and such measures require a period of time post implementation before a reliable assessment of their effect can be made. Nevertheless, a number of indications have emerged from the project to date, which indicate that it has had a positive influence on the extent to which cycling is used for work journeying, but also that more needs to be done to achieve a really significant shift in favour of commuting by bicycle.

- * Most of the work-place pro-cycling measures which have been introduced are very well used, particularly secure cycle parking, showering and changing facilities and cycle loan schemes.
- * Some of the facilities have been over-subscribed or are over-used, and there have been requests for additional facilities, again particularly for secure cycle parking, and showering and changing facilities.
- * Prior to the Cycle Challenge programme there was a marked seasonal variation in the extent of cycle commuting among the eight partners, with a noticeable decline during the winter months. Since implementation, a number of the partners have observed a much more even spread of cycle commuting activity throughout the year, with less of a drop-off during autumn and winter.
- * Once agreement is reached on what work-site facilities are needed, it is important to consider carefully detailed issues relating to design and implementation. For example, secure cycle parking was requested by employees of one of the partners, and was duly introduced. However, because the parking stands were sited some distance from the entrances to the buildings and offered no weather protection - whereas railings by the main entrances did - cyclists ignored the new parking stands and continued using the railings.
- * Allied to the point above, cyclists value high quality and well thought out facilities, and they appreciate having their needs considered and 'being taken seriously'. Good standard of provision appears to help improve the image and appeal of cycling.
- * However, work-site measures to encourage cycle commuting need to be complemented by a more cycle-friendly road environment, if cycling is to realise its full potential as a means of travel for shorter work trips. The responsibility for making the road environment less cycle-hostile - through measures to reduce the speed and volume of motor traffic, for example - normally rests with the local highway and planning authorities. Nevertheless, based on the comments of their employees, employers can often make useful suggestions for minor physical improvements which can enhance the cycle-friendliness of their catchment area.

THE ONE-STOP CYCLE SHOP FEASIBILITY STUDY

The One-stop Cycle Shop or 'Bikestop' feasibility study, commissioned by Pedals and financed under the Nottingham Cycle Challenge Project, with a view to encouraging the provision for cycle parking to serve smaller scale employers in the city centre, was completed in 1997. The main function of the Bikestop would be the provision of secure parking, showers and changing facilities, general information on cycling, and would include a café.

The recommended base for the project, arising from the feasibility study, was a former British Waterways building, adjacent to Nottingham Canal, and very close to the central rail station and one of the two large shopping complexes in Nottingham city centre - the Broadmarsh Centre. It is located to the south of the central commercial core, and is relatively well served by cycle routes from the flatter south and south-west of the Greater Nottingham area. Unfortunately, the reports recommendations have not yet been acted upon, although the concept of a Bikestop centre may be incorporated into the planned redevelopment of the Broadmarsh shopping centre, close to the original suggested site.

SUMMARY AND CONCLUSIONS

The Cycle Challenge Project in Nottingham has helped raise the profile of cycling and enhanced its acceptance as a legitimate means of transport for work journeying. The extensive cycle parking improvements in particular have shown clear evidence of suppressed demand - now released - and several of the project partners have been pressing for more financial assistance to extend provision still further. Fiscal incentives are clearly an important key to partner commitment, while ensuing positive publicity has helped sustain partner enthusiasm. The indications of increased

bicycle usage has led to pressure for highway improvements in and around the partners' worksites, as well as on commuter routes, and this has had the effect of encouraging other employers in the vicinity to consider introducing workplace cycle facilities.

In terms of its longer term influence, the Nottingham Cycle Challenge Project has helped to draw larger employers into the green commuter planning activities, co-ordinated by the City and County councils, in which Nottingham is leading the way in the UK. Moreover, with the recent shift in influence at National Government level towards encouraging sustainable travel for work journeying, demonstrated in last July's White Paper: A New Deal for Transport, it is likely that policy and funding support for initiatives which build on the Cycle-Friendly Employers Project can be anticipated in future.

BICYCLE MEASURES IN MOBILITY MANAGEMENT OF COMPANIES

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BICYCLE MEASURES IN MOBILITY MANAGEMENT OF COMPANIES

Several initiatives have been taken in the past to reduce these negative effects of the use of private vehicles as solo car driving for the home-to-work-trip. Activities for a modal shift were mostly concentrated on public transport. The bicycle as a equivalent mean of transport for the every day home-to-work-trip is very often neglected. Analyses in many companies have shown that there exist a wide shift potential for the bike.

Apart from the classical measures of TDM (push and pull) such as criterions of the use of companies parking space, job tickets, infrastructure measures, information campaigns and campaigns of public awareness etc. there is a strong focus on a new approach: target groups can test a new behaviour. E.g. Job & Bike: Campaigns containing fitness tests, bike test action, safety days, bikers party, bikers breakfast, lotto etc.. Test month for public transport, Individual trip consulting.

MAßNAHMEN ZUR FÖRDERUNG DES FAHRRADES IM RAHMEN VON BETRIEBLICHEM MOBILITÄTSMANAGEMENT

In der Vergangenheit gab es bereits mehrere Initiativen, die zum Ziel hatten, den Auto-Alleinfahreranteil im Berufsverkehr und alle damit verbundenen negativen Folgen zu reduzieren. Die meisten Maßnahmen betrafen dabei den Öffentlichen Verkehr. Das Fahrrad als Verkehrsmittel für den täglichen Gebrauch, also auch für den Arbeitsweg, wurde oft übersehen. Zahlreiche Analysen in mehreren Betrieben haben ergeben, daß es ein großes Umsteigepotential auf das Fahrrad gibt.

Neben den klassischen Maßnahmen (Anreiz und Restriktion), wie Kriterien für Parkraummanagement, Jobtickets, Infrastrukturmaßnahmen, Kampagnen zu Information und Bewußtseinsbildung usw wird großes Augenmerk auf einen neuen Ansatz gelegt: Testen von neuem Verhalten. Z.B. Job & Bike: Kampagnen die Fitness-tests, Radtests, Sicherheits-Checks, Fahrradfeste, Fahrradfrühstück, Fahrradlotto etc beinhalten. Testmonat Öffentlicher Verkehr oder persönliche Mobilitätsempfehlungen.

ENGLISH

DEUTSCH

KOLESARSKI UKREPI PRI UPRAVLJANJU MOBILNOSTI V PODJETJIH

V preteklosti so bile različne iniciative za zmanjšanje negativnih posledic uporabe zasebnih prevoznih sredstev, kot je prevoz na delo in domov za le enega človeka. Aktivnosti za spremembe, so se osredotočale predvsem na javni prevoz. Kolo, kot enakopravno prevozno sredstvo, je pogosto zanemarjeno, ko razmišljamo o vsakodnevem prevozu na delo in domov. Analize v mnogih družbah so pokazale, da obstaja v tem obziru velik potencial za kolesa.

Razen klasičnih meril TDM (push and pull), kot so kriteriji uporabe parkirišč družbe, infrastrukturni delež, informacijske kampanje in kampanje javne zavesti..., je zelo prisoten nov pristop: ciljne skupine lahko testirajo novo vedenje. Npr. Delo in kolo: kampanje, ki vsebujejo teste sposobnosti, dnevi varnosti, kolesarska zabava, kolesarski zajtrk, loto itd., Mesec testiranja javnega prometa, Svetovanje individualnih potovanj

MOBILITY MANAGEMENT IN AUSTRIAN COMPANIES**ENTWICKLUNG DES BERUFSVERKEHRS**

In den vergangenen drei Jahrzehnten hat sich das Verkehrsverhalten der Berufstätigen beim Zurücklegen ihres Arbeitsweges enorm verändert.

Besonders deutlich lassen sich in der Statistik folgende Tatsachen erkennen: - die Zahl der Pendler hat zugenommen und ist weiterhin im steigen,

- die Arbeitswege sind länger geworden und,
- der Anteil des Pkw für die Arbeitswege hat drastisch zugenommen.

Was sich jedoch kaum verändert hat, ist die Zeit, die die Berufstätigen für den Arbeitsweg pro Tag aufbringen.

Diese Entwicklung hat mehrere Gründe, auf die an dieser Stelle nicht näher eingegangen werden kann. Was jedoch bleibt, sind die Auswirkungen dieser Entwicklung, die in den meisten Fällen nicht nur positiv gesehen werden können.

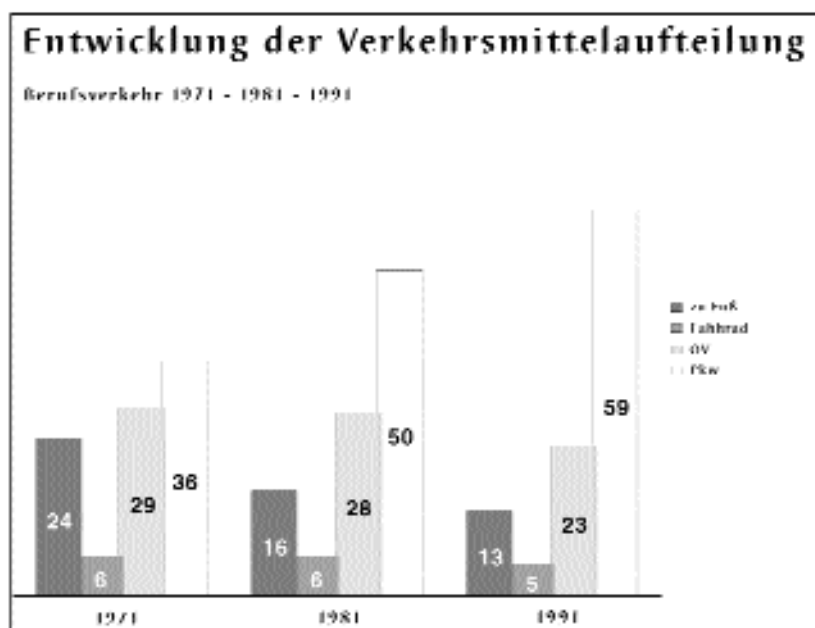


Abb.1: Entwicklung der Verkehrsmittelaufteilung in Österreich von 1971 bis 1991 (Quelle ÖSTAT).

PROBLEME DES BERUFSVERKEHRS UND NUTZEN VON BETRIEBLICHEM MOBILITÄTSMANAGEMENT

Warum aber soll man sich damit beschäftigen? Wem nutzt es? Wer hat etwas davon?

Es gibt keine Handlungen oder Aktivitäten, die nicht mit einer Erwartung oder mit einem Nutzen verbunden sind. Dabei kann es sehr unterschiedliche Nutzen geben.

Ein Nutzen kann etwa sein, wenn ein Ziel erreicht wird (z.B. Imagenutzen für einen Betrieb) aber auch wenn ein Problem gelöst wird. Dies kann die unterschiedlichsten Menschen / Institutionen betreffen. Für ein Unternehmen wird der Nutzen darin liegen, daß

- ein bestehendes Problem gelöst wird (Leidensdruck)
- sich Aktivitäten im Bereich Mobilitätsmanagement auch in einer Imagesteigerung zeigen,
- Lieferanten wie auch der betriebseigene Wirtschaftsverkehr (ohne Behinderung durch die eigenen Mitarbeiter) ans Ziel kommen, d. h. der Betrieb leichter erreichbar wird
- Mitarbeiter gesund und pünktlich zur Arbeit erscheinen

Für die Mitarbeiter zeigt sich der Nutzen von Betrieblichem Mobilitätsmanagement im Bereich

- Gerechtigkeit (angesprochen werden sollen hier nur Parkplatzvergabe und Fahrtkostenzuschüsse) - des Komforts bei der Anreise zum Betrieb
- in der Sicherheit (Statistiken zeigen, daß mehr Unfälle auf dem Weg zur Arbeit passieren, als bei der Arbeit selbst)
- Kosten: Fast immer sind Dauerkarten oder Jobtickets für den ÖPNV billiger als die Benützung des PKW. Vom Zufußgehen oder Radfahren ganz zu schweigen.
- Familie (hier nur zwei Schlagworte "Streßminderung" und "Separationseffekt")

Aber auch die Anwohner sind von Maßnahmen im Bereich Mobilitätsmanagement betroffen. Ihr Nutzen liegt darin, daß

- die Pkw-Verkehrsbelastung mit seinen negativen Auswirkungen - besonders dem Parksuchverkehr - sinkt
- damit auch das Unfallrisiko gesenkt werden kann
- die Parkraumkonkurrenz zwischen Anwohnern und Mitarbeitern geringer wird.

Für die Allgemeinheit zeigt sich der Nutzen

- in der Entlastung der Straßen während der Spitzenzeiten (man denke nur an die unökonomische Pkw-Nutzung im Berufsverkehr, bei der der Besetzungsgrad bei 1,1 liegt)
- dadurch, daß weniger Pkw auch weniger Behinderungen für den ÖPNV und andere Verkehrsmittel ' bedeutet
- durch weniger Unfälle. In Österreich zeigt die Statistik, daß das Risiko, in einen Unfall verwickelt zu werden, zwischen ÖPNV - Rad - und Pkw bei 1 : 11 : 17 liegt.

Und schließlich läßt sich auch noch der Nutzen für die Wirtschaft allgemein aufzeigen: in der besseren Erreichbarkeit der eigenen Geschäfte

- durch leichteres Liefern
- durch ökonomischere Raumnutzung
- durch die Stärkung der Nähe "Stichwort: Einkaufen im Betriebsumfeld" und damit in der Erhaltung der Multifunktionalität

Es gibt also eine Menge Gründe, die dafür sprechen, daß sich Betriebe mit Mobilitätsmanagement beschäftigen. Dazu kommen noch die im Vergleich zu anderen Verkehrszwecken günstigen Rahmenbedingungen des Berufsverkehrs.

Dazu gehört v.a., daß er täglich zur selben Zeit und mit den selben Ziel- und Quellbeziehungen stattfindet. Diese Gegebenheiten machen es verhältnismäßig einfach, einigermaßen dauerhafte Verhaltensänderungen bei den Mitarbeitern anzuregen und zu erreichen.

LÖSUNGSSTRATEGIEN UND MAßNAHMEN ALLGEMEIN

Die übergeordneten Ziele von Betrieblichem Mobilitätsmanagement stehen u.a. in Einklang mit den Zielen von Städten und Gemeinden. Auf einen gemeinsamen Nenner gebracht kann man sie zusammenfassen unter den Schlagwörtern:

- Unnotwendigen Verkehr vermeiden
- Verkehr auf umweltschonende Verkehrsträger verlagern, sowie motorisierten durch nichtmotorisierten Individualverkehr ersetzen
- Verkehr, entsprechend dem neuesten Stand der Technik, so verträglich wie möglich zu gestalten (verbessern).

Das Hauptaugenmerk bei Unternehmen liegt sicher im Bereich des Verlagerens von MIV (Solo-Car-Drivers) auf andere Verkehrsmittel.

Welche Vorgangsweise auch immer bei der Konzeption gewählt wird - sei es die Erstellung eines gesamtheitlichen Mobilitätskonzeptes mit vorhergegangener Analyse des Mobilitätsverhaltens der Mitarbeiter oder lediglich die Konzeption und Umsetzung einzelner Maßnahmen und Aktionen - erfolgreich können die Maßnahmen nur dann sein, wenn

sie von den Mitarbeitern mitgetragen werden und diese den (eigenen) Nutzen auch erkennen können.

Den größten Erfolg verspricht dabei die Strategie von "push and pull", also von regulierenden Maßnahmen für Pkw-Alleinfahrer auf der einen Seite (beispielsweise durch Parkraumbewirtschaftung) und Anreizsystemen für den Umweltverbund auf der anderen Seite (z.B. durch Fahrtkostenzuschüsse für den ÖPNV).

Erfolgsversprechend sind Angebote an Mitarbeiter, ein "neues Verhalten" zu erproben, z.B. während einer Schnupperaktion für den ÖPNV, um sich während dieser Testphase selbst ein Bild vom persönlichen Nutzen zu machen. Beispiele davon finden sich weiter unten in diesem Beitrag.

Was nun im speziellen umgesetzt wird, seien es infrastrukturelle, organisatorische oder informative Maßnahmen oder auch Aktionen, der Erfolg hängt im Wesentlichen von der Kommunikation und der Information ab. Was wird wann und warum umgesetzt? Wie betrifft mich (als Mitarbeiter) diese Umsetzung? Welchen Nutzen habe ich davon? Wie kann ich an der Aktion teilnehmen? Wo bzw. bei wem kann ich meine Meinung zu diesem Thema deponieren?

In den meisten Fällen wird die Wahl der Maßnahmen, die konzipiert und umgesetzt werden sollen, aus der Überlegung heraus entwickelt, wie sich das Aufwand - Nutzen - Verhältnis darstellt. Bewußt wird hier nicht von einem Kosten - Nutzen - Verhältnis gesprochen, da gerade beim Thema Mobilität und im Bereich Verkehrsverhalten auch subjektive Werthaltungen eine Rolle spielen. Konkret bedeutet das zum Beispiel, daß Betriebe beispielsweise zwar eine betriebsinterne Parkraumbewirtschaftung als die objektiv wirkungsvollste Maßnahme ansehen, diese aber nicht umsetzen, aus Angst, dadurch die Mitarbeiter zu verärgern, was wiederum Auswirkungen auf das Betriebsklima und die Arbeitsleistung der Mitarbeiter haben könnte. Oft begnügt man sich daher mit reiner Information oder mit Maßnahmen, die niemandem "weh tun".

POTENTIALE FÜR DAS FAHRRAD (NMV, B&R, P&B)

Potentiale für ein Umsteigen auf umwelt- und sozialverträgliche Verkehrsmittel gibt es in jedem Betrieb. Für ein Umsteigen auf das Fahrrad ist v.a. die Entfernung zwischen Wohnort und Arbeitsplatz ein Kriterium sein. Von fahrradfreundlichen Entfernungen kann man sprechen bei Distanzen bis zu 5 km, wobei jedoch Faktoren wie die Überwindung großer Höhenunterschiede oder die Fahrradkultur im allgemeinen (in der betreffenden Stadt / im Betrieb) eine entscheidende Rolle spielen. Oft ist es aber so, daß nicht genügend Mitarbeiter im unmittelbaren Umkreis des Betriebes wohnen, es also nicht genug Umsteigepotential gibt, sodaß Betriebe gar keine Maßnahmen für das Fahrrad setzen können. Dabei könnte das Potential beträchtlich erhöht werden, wenn die kombinierten Mobilitätsformen berücksichtigt würden. Im besonderen sollen hier Park & Bike und Bike & Ride Erwähnung finden. Damit könnte für einen weit größeren Mitarbeiterkreis das Fahrrad eine Alternative zum Pkw darstellen.

ERFOLGREICHE FAHRRADMAßNAHMEN IN BETRIEBEN:

Neben den bereits bekannten Maßnahmen zur Förderung der Fahrradnutzung, wie beispielsweise die Errichtung von diebstahlsicheren, überdachten, modernen, eingangsnahen Abstellplätzen, werden hier v.a. Aktionen beschrieben.

DAS FAHRRADLOTTO

Die Vorarlberger Firma Giesinger und Kopf (GIKO) hat das sogenannte Fahrradlotto entwickelt. Dabei wurde nicht vom gebräuchlichen Ansatz aus gegangen, betriebseigenen Parkraum zu bewirtschaften, sondern ein Anreiz geschaffen, die Parkplätze nicht zu benützen. Das Prinzip ist denkbar einfach: an einem den Mitarbeitern nicht bekannten Tag der Woche wird aus der Personaldatenbank ein Mitarbeiter mittels Zufallsgenerator ermittelt. Danach wird kontrolliert, ob diese Person mit dem Pkw zur Arbeit gekommen ist. Ist der betreffende zu Fuß, mit dem Rad oder mit dem ÖPNV im Betrieb - also nicht mit dem eigenen Auto - werden 300 öS als Gewinn ausbezahlt. Anderenfalls kommt dieses Geld in den Jackpot für die nächste Woche. Der Erfolg dieser relativ billigen Ganzjahresmaßnahme basiert v.a. auch auf dem Spieltrieb, der in jedem von uns steckt. Interessierte Betriebe können das gesamte Set zur Durchführung dieser Aktion, den sogenannten FAHR RAD-LOTTO-KOFFER beim Umweltinformationsdienst Vorarlberg (Fax: 05574/511-4218) bestellen.

RADLERFRÜHSTÜCK

Eine ebenfalls schon mehrfach erfolgreich durchgeführte Aktion ist das Radlerfrühstück. In Vorarlberg, aber auch in

Graz (Firma AVL List, die Steiermärkische Gebietskrankenkasse GKK) wurden dabei Mitarbeitern, die an einem vorher bekannten Tag mit dem Rad zur Arbeit kamen, mit einem Frühstück mit Kaffee/Tee und Kipferl begrüßt. In einigen der Kipferl waren Gewinnungsscheine eingebacken. Bei der GKK wurde diese Aktion mit der Eröffnung der neuen Fahrradabstellanlage kombiniert.

FAHRRAD-CHECK

Die Firma AVL List aus Graz bot ihren Mitarbeitern eine Woche lang die Gelegenheit, ihre Fahrräder kostenlos auf Verkehrssicherheit überprüfen und reparieren zu lassen. Die Mitarbeiter konnten sich von Spezialisten Tips zu Einstellung, Ausrüstung und Fahrweise holen und Materialien zu besonders günstigen Bedingungen erwerben. Kooperiert wurde mit einem ansässigen Fahrradhändler. Die Reparaturen wurden von eigenen Mitarbeitern der Lehrwerkstätte im Rahmen ihrer Ausbildung durchgeführt. Diese Aktion war ein solcher Erfolg, daß der Fahrradcheck bei Bedarf seither einmal pro Woche als Dauereinrichtung bei der AVL durchgeführt wird.



-AMOR)

VERKEHRSSICHERHEIT UND KINDER-GESCHICKLICHKEITSPARCOURS

Die Steiermärkische Gebietskrankenkasse GKK hat im Rahmen ihrer Bemühungen zur Förderung der Benützung von umweltfreundlichen Verkehrsmitteln für den Arbeitsweg ein Fahrradfest für ihre Mitarbeiter organisiert, bei dem auch deren Familien willkommen waren. Dabei bestand u.a. die Möglichkeit unterschiedliche Fahrradtypen zu testen (Mountainbikes, Elektrofahrräder, Citybikes, Sidewalker etc.). Außerdem wurde eine Fahrradtauschbörse durchgeführt. Besonders interessant war diese Maßnahme für die Kinder der Mitarbeiter, die ihr eigenes altes Rad gegen ein passendes neues tauschen konnten. Für die Kinder wurde außerdem auch ein Geschicklichkeitsparcours aufgebaut, den es zu bewältigen galt. Der Betriebsrat lud zu einem Imbiß und organisierte eine Autogrammaktion mit Fußballteamspieler Mario Haas.

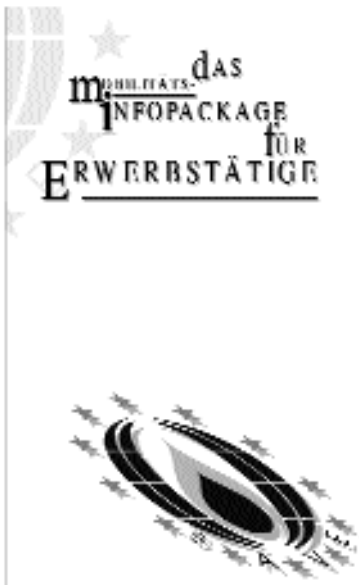


mes (SAVE) hat die Forschungsgesellschaft Mobilität FGM-AMOR (Austrian Mobility Research) für Erwerbstätige in Grazer Betrieben (Projektname IMPACT) entwickelt. Ziel dieser Maßnahme

Abb.3: Fahrrad-Geschicklichkeitsparcours bei der GKK (Foto FGM-AMOR)

bzw. solchen, die ihren

Wohnort wechseln, eine rasche persönliche Information über ihren neuen Arbeitsweg zu geben. Diese Information soll den Mitarbeitern zur Verfügung stehen, sobald sie den Arbeitsweg zurücklegen müssen, damit sie Alternativen zum Pkw kennenlernen (und nicht den Arbeitsweg automatisch als Auto-Alleinfahrer zurücklegen). Das Besondere an diesen Packages ist, daß nicht nur bestehendes Informationsmaterial für alle Verkehrsarten verteilt wird, sondern daß darüberhinaus persönliche Mobilitätsempfehlungen für ÖPNV und das Fahrrad auf den Wohnort, den Betrieb und die jeweiligen Arbeitszeiten abgestimmt, ausgearbeitet werden. Als besonderer Anreiz wird eine kostenlose Test-Wochenkarte für den ÖPNV beigelegt. Dieses von der Stadt Graz (Amt für Wirtschaftsförderung) cofinanzierte Projekt wird 1999 abgeschlossen.



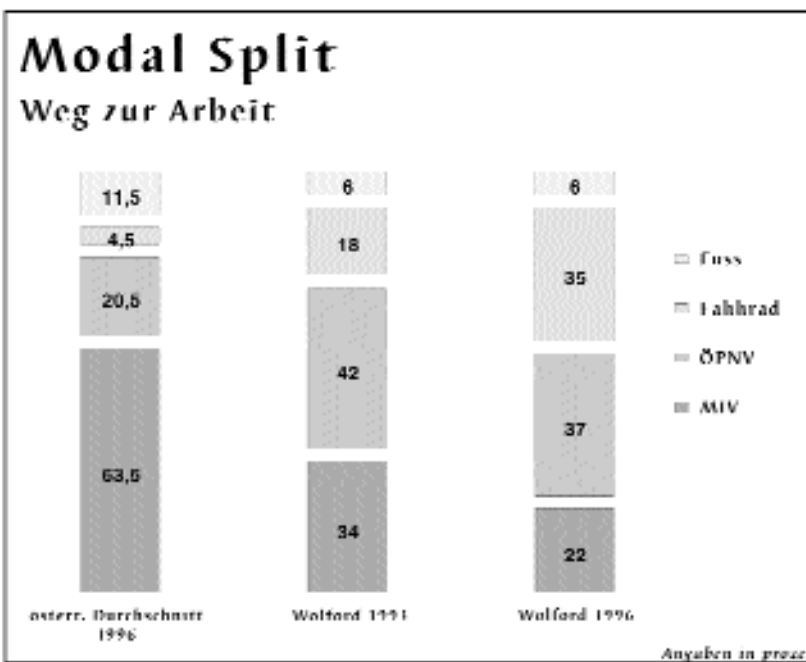
Info-Packages für Erwerbstätige

SCHNUPPERMONAT FAHRRAD IN LINZ

Die Oberösterreichische Gebietskrankenkasse setzt ebenfalls Maßnahmen des "testing new behaviour". Adäquat zur Aktion ÖPNV-Testfahren konnten sich hier Mitarbeiter melden, die gern bereit sind, einmal auf ihr Auto zu verzichten, und ihren Arbeitsweg (und natürlich auch andere Wege) mit dem Rad zurückzulegen. Ihnen wurde eine für ihren Arbeitsweg optimale Radroute vom Radfahrbeauftragten der Stadt Linz ausgearbeitet. In zwei gemeinsamen Treffen wurden die Mitarbeiter, unterstützt durch die Moderation von Mobilitätsberatern, auf diese Testphase vorbereitet. Besonderes Augenmerk wurde (neben den tatsächlich "erfahrenen" Vor- und Nachteilen für jeden einzelnen (Kostenaspekt, Flexibilität, Sicherheit etc.) auf eine Mängelanalyse der Radroutenverbindungen zur OÖGKK und der Rahmenbedingungen für Radfahrer im allgemeinen gelegt. Diese Mängel wurden gesammelt, aufbereitet und den jeweils zuständigen Stellen (Verkehrsressort der Stadt Linz und OÖGKK) übergeben. Die Erfahrungen der Teilnehmer sollen mithelfen, andere Kollegen für das Fahrrad als Verkehrsmittel zu gewinnen (Multiplikationseffekt).

GANZHEITLICHE ANSÄTZE AM BEISPIEL VON SUCHHARD SCHOKOLADE GMBH | WOLFORD AG | ÖLZ GMBH & CO

Ausgehend von der Aktion "Fahr Rad" des Umweltinformationsdienstes Vorarlberg haben sich mehrere Betriebe mit dem Thema "Betriebliches Mobilitätsmanagement" beschäftigt. Unter anderem haben die Firmen Suchhard Schokolade GmbH, Wolford AG und Ölz GmbH & Co integrierte betriebliche Mobilitätskonzepte entwickelt, unter besonderer Berücksichtigung der Förderung des Fahrrades. Die Palette der Maßnahmen reicht von der Installierung attraktiver und sicherer Radabstellplätze mit Luftpumpstation (sogar Radler-Tiefgaragen mit direktem Zugang zum Arbeitsplatz, bei gleichzeitiger Verlegung der Autoparkplätze in weiter entfernte Bereiche des Betriebes), über Parkraumbewirtschaftung mit Zweckbindung der Gebühren bis hin zu Betriebsausflügen mit dem Fahrrad. Darüber hinaus werden auch Anstrengungen unternommen, Dienstwege und Botenfahrten mit dem Fahrrad zurückzulegen. Der gelungene Mix aus regulierenden Maßnahmen für den Pkw-Alleinfahrerverkehr und Anreizen für den Umweltverbund zeigt bereits deutliche Erfolge (vgl. Abbildung:)



ma Wolford AG (Quelle: Wolford AG, Grafik FGM-

Im Handbuch "Mobilitätsmanagement im Betrieb - Handbuch für Betriebsräte und Betriebsbeauftragte", verfaßt von der Forschungsgesellschaft Mobilität FGM - AMOR (Hrsg. Gewerkschaft der Privatangestellten und Bundesarbeitskammer, © 1998), finden sich eine Reihe von weiteren erfolgreichen österreichischen und internationalen Beispielen, die nicht nur den Fahrradverkehr betreffen.

CAN ONE MAKE WALKING AND CYCLING MORE ATTRACTIVE WITHOUT CAUSING SAFETY PROBLEMS?

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CAN ONE MAKE WALKING AND CYCLING MORE ATTRACTIVE WITHOUT CAUSING SAFETY PROBLEMS?

A consortium consisting of 10 partners from 8 European countries (A, D, E, FIN, I, NL, NOR, S) collaborated in the frame of the EU research project WALCYNG. The goal was to enhance walking and cycling ("= walcyng") instead of short car trips. This should be done based on a marketing model: Attractiveness of the walcyng modes should be adjusted, or improved, on the basis of extensive information collected from „users“ - practising walcers (= ...) - and potential users - those people who should be convinced, or persuaded to walk or cycle instead of using the car for short trips. Potentials are considerable, 50% of all car trips in Europe are shorter than 5 km (10 to 15 min by bike), and 1/3 of these short trips are below 1 km (10 to 15 min walk). The areas where measures addressed to the users are recommended are on the Product side (infrastructure, structures (?)), on the Communication side (user information, PR, advertising), and on the incentive side (make potential users try out your product, i e to walce). Moreover, two types of measures are dealt with

ENGLISH

that are addressed to administrators, politicians and experts who are, or want to be active to the advantage of walking and cycling: An „Inoculation“ work package should produce materials on how those active in the area of walking can protect themselves against all types of negative attitudes one often meets in that role, according to McGinnies' „Forewarned is forearmed“. Last not least, a „Lobbying“ work package deals with the question of how to achieve structural changes, and how to keep those changes upright.

DEUTSCH WIE KÖNNEN RADFAHREN UND ZUFUßGEHEN ABTRAKTIVER GESTALTET WERDEN OHNE GLEICHZEITIG SICHERHEITSPROBLEME ZU VERURSACHEN?

Im Rahmen des EU-Projektes WALCYNG fand sich ein Konsortium von 10 Partnern aus 8 Europäischen Ländern (A, D, E, FIN, I, NL, NOR, S) zusammen. Das Konsortium setzte sich zum Ziel Bedingungen zu erarbeiten, wie der Fußgänger- und Radfahranteil gesteigert werden kann, bei gleichzeitiger Senkung des Anteiles der kurzen Autofahrten. Dieses Ziel sollte mit Hilfe des Marketingmodells erreicht werden. Ausgiebige Untersuchungen über die Bedürfnisse aktiver Radfahrer und Fußgänger (=walcers) sowie möglicher walcers (=jene Gruppe, die zum Umsteigen überredet werden müßte) bildeten die Grundlage für ein Maßnahmenpaket zur Attraktivierung dieser beiden Fortbewegungsarten. Maßnahmen wurden vorgeschlagen im Bereich der- Produktpolitik (z.B. Infrastruktur), der Kommunikationspolitik (z.B. PR, Benutzerinfos) und der Anreizpolitik (z.B. gratis Leihräder in Firmen). Zusätzlich sind zwei Maßnahmenbündel erarbeitet worden, die an Administratoren, Politiker und Experten adressiert sind.

SLOVENSKO ALI LAHKO NAREDIMO HOJO IN KOLESARJENJE PRIVLAČNEJŠE BREZ POVZROČANJA TEŽAV Z VARNOSTJO?

Konzorcij, ki ga predstavljajo sodelavci iz osmih evropskih držav (A, D, E, FIN, I, NL, NOR, S), je deloval v okviru evropskega projekta, imenovanega WALCYNG (izgovor isti kot pri 'plesati valček'). Cilj je bil pospešiti hojo in kolesarjenje (WALKing + CYcliNG) namesto kratkih izletov z avtomobilom. Temeljilo naj bi na marketinškem modelu: privlačnost teh načinov bi bilo treba prilagoditi ali povečati na osnovi obširnih informacij, zbranih med "uporabniki" - torej pešci in kolesarji - in potencialnimi uporabniki, tistimi, ki jih je potrebno prepričati, naj hodijo ali kolesarijo, namesto da uporabljajo avtomobile za kratke poti. Potenciali so precejšnji, kajti v Evropi naredimo z avtom 50% vseh poti, krajših od 5km (10 do 15 min s kolesom) in 1/3 teh poti je krajših od 1km (10 do 15 min hoje). Področja, kjer so omenjeni uporabnikom naslovljeni ukrepi priporočeni, so produkcija (infrastruktura, druge strukture), komunikacije (uporabniške informacije, stiki z javnostjo, oglaševanje) in spodbujanje (pripraviti potencialnega uporabnika do tega, da poskusi vaš izdelek, torej da hodi in kolesari). Razen tega sta bili izvedeni dve vrsti ukrepov, ki so namenjeni upraviteljem, politikom in strokovnjakom, ki so ali želijo biti aktivni v smeri hoje in kolesarjenja: "vgradnja" delovnega paketa bi morala zagotavljati material, s katerim bi se tisti aktivni na področju hoje in kolesarjenja zaščitili pred vsemi vrstami negativnih pogledov, ki jih pogosto srečamo v tej vlogi, ali kot pravi McGinnies: "Vnaprej opozorjen je vnaprej oborožen." In nenazadnje, "lobistični" delovni paket zadeva vprašanje, kako doseči strukturne spremembe in kako jih obdržati pokončno.

CAN ONE MAKE WALKING AND CYCLING MORE ATTRACTIVE WITHOUT CAUSING SAFETY PROBLEMS?

1 INTRODUCTION

It is evident that car traffic in most urban areas has grown so much that many important aspects of urban life are inhibited to such an extent that the question of sustainability has become an important topic.

Short car trips play a very important role in this context: It is an amazing fact that the frequency of the use of car for shorter distances is very high. On average - in European countries - approx. 15 % of all car trips are shorter than 1 kilometre, 30 % shorter than 2 kilometres and 50 % are shorter than 5 kilometres. Consequently there would be a great potential of reducing the number of car trips if it was possible to convince car drivers to replace short car trips by walking or cycling (see Solheim & Stålngeby 1997)..

WALCYNG¹ was a project carried out in the 4th framework programme of the EU in the area of Urban Transport (DGVII). There, measures should be developed in order to convince people to walk and to cycle instead of using the car for short trips (e.g., < 5 km for cycling, < 1 (2?) km for walking).

¹ WALKing and CYcliNG instead of short car trips; Hyden et al. 1997

2 THE MARKETING APPROACH

A marketing approach was chosen to do this work (for a general overview of the concept of marketing see Kotler et al. 1996).

Enhancing walking and cycling instead of short car trips means to convince and/or to motivate people (car drivers) to change their behaviour (to walk and cycle instead of using the car on short trips).

In terms of marketing this can be verbalised as follows:

Information policy: One has to collect information about potential and practising customers, and about the market situation: what are the target groups, what kinds of products are on the market, analyses of the needs and interests of different groups of people, etc.

Product and distribution policy: Based on the results of information policy, adequate and attractive technical solutions are worked out. Styling and layout aspects have to be considered thoroughly and under the perspective that they meet customers' and potential customers' needs; moreover, customers should meet good solutions as consistently as possible

Communication policy: Users and potential users have to be informed that their needs and interests are taken into consideration. The product has to be displayed and has to be given an image

Incentive and pricing policy: Based on the results of information policy one has to provide incentives given by the society, institutions, companies, etc., on all levels

In commercial marketing the wished-for behaviour is mostly that the addressed people should buy a thing. In social marketing which is our case, the wished-for behaviour is most often some change in habits, or routines, or attitudes (e.g., to adopt an idea).

3 THE MOST RELEVANT USER NEEDS

More precisely, we should talk about the most relevant motivational aspects for users and potential users (see Stangeby 1997). Hakamies-Blomquist & Jutila (1997) conclude from literature studies that the following aspects are relevant for walcers from a motivational point of view:

- A problem related to Social Values is the low status of walcyng, especially when compared with driving a car. Also, the nature of the interaction between different road users is highly influenced by social attitudes.
- Health: Cycling is good for the health but cannot be done without good basic health.
- Aesthetic problems evolve as pedestrians and cyclists have time to look around and really get to know the environment. A green environment is particularly valued. Noise from surrounding traffic and pollution are experienced as aesthetic and health problems.
- Comfort: Since walking is not only a means of transport but also a way of socialising etc., it is important that there is special provision of benches, waste-baskets, shelters and public toilets, etc.
- The main Mobility problem of cyclists is the lack of a continuous and good quality cycle path network.
- Security: Experienced safety does not always correlate with objective safety. To increase the experienced safety of walcers, cyclists should be separated from cars, and pedestrians should be separated from both cars and cyclists. On the other hand, personal security is threatened if walcers are too isolated, especially if street lighting is not sufficient.
- Unlike car drivers, walcers are not offered any financial support in many countries. Moreover, the relative inexpensive-ness of cycling is threatened by bicycle theft

4 HOW TO APPROACH TARGET GROUPS ACCORDING TO THE MARKETING SCHEME

4.1 INCENTIVE STRATEGIES

Incentives are important instruments to influence travel behaviour in a walcyng-friendly way (see Ausserer & Risser 1997 a). There are mainly three types of incentives that can be given in the WALCYNG area:

1. Incentives from public institutions to companies (e.g., tax reductions, walcyng certificates, etc.)
2. Incentives from public institutions to the citizens (e.g., tax reductions, reduced entrance fees for museums and other public institutions, walcyng races and other competitions, etc.)
3. Incentives from public and private institutions to their employees (e.g., bicycle lotteries, free service for the bike, more days off, etc.)

At the moment incentive strategies that are not concerned with the car are most often focusing on cycling and the use of public transport. Walking is hardly ever supported in this way.

Some guidelines for giving incentives were established:

- Incentive Policy should be based on Information Policy - the more one knows about the target groups, the more efficient features one can give to ones incentive policy

- It should include negative incentives that will make car driving less attractive, as they are obviously very efficient measures to make people choose alternatives
- Define the behaviour that should be achieved with the help of incentive strategies as detailed as possible, as this is most relevant for a behaviour change

4.2 COMMUNICATION STRATEGIES

In the frame of marketing, communication is used as a means to promote the quality of supply, so that a certain demand will increase. When using communication in this sense one should consider the characteristics of the target groups, cultural differences, existing "hardware" (e.g., land-shape, topography, climate), etc.. This means that the instrument of communication and campaigning should be adaptively used (e.g., Vermeulen 1997).

4.3 INOCULATION

The question in connection with this concept was: How should researchers and practitioners prepare themselves for the structural difficulties they will meet with a topic that so far is considered of inferior importance? The concept of inoculation (see McGuire 1964; Ausserer & Risser 1997 b) reflects the idea that mentally dealing with expected problems helps one to react more coolly and objectively when they arise, to be prepared and to resist. The results are addressed to researchers, politicians and decision makers. They reflect that walking and cycling are structurally weak modes. Those who work in the area meet many problems connected to self-esteem, image, identification, etc. that cause frustration. Being forewarned ("inoculated") of all this would make (self-)motivation for the mentioned target groups easier. The forewarning in the frame of WALCYNG work consists of a systematisation of the situations and arguments ("killer phrases") one meets.

4.4 LOBBYING

If the importance of walking and cycling as transport modes should be raised and sustained then some structural support and promotion of the walking and cycling issues has to be provided (Ausserer & Risser 1997 c). This type of support is more or less covered by the concept of lobbying. The A and O of the whole lobbying process is to provide possibilities to communicate with relevant persons.

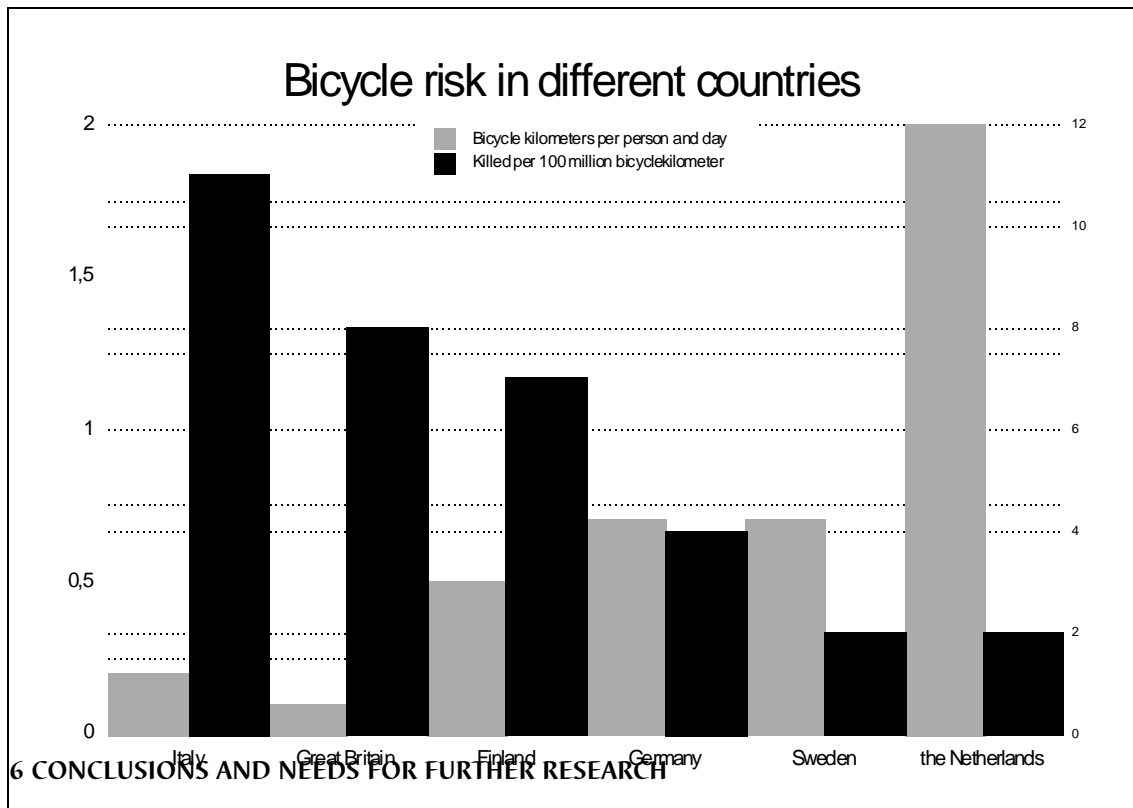
Questions to be asked in order to follow up one's lobbying work are the following:

- Are there any institutions, private or public, who are responsible for WALCYNG matters in a certain area (a city, a region, a country)?
- Are there any officially responsible people who also are known to the public and who can be addressed?
- How many "meters" of lines are written in the newspapers in the region? What are the contents?
- Are there any well-known people, who walce obtrusively? Who is a "known person" depends on the target group (youngsters, "average citizens", elderly people, men/women)
- Is there any "product-placement"-policy in the official papers (is WALCYNG illustrated in some way in the papers that the municipality sends to the households)
- When pilot projects are done to test the possibilities of enhancing WALCYNG, are they well prepared and is it a rule, then, that evaluation steps are taken?
- Are cycle-days, cyclist-meetings, amateur-races organised in the region or locally?
- Are there any "cycle saloons", or cycle fairs, organised? What activities can be registered at such events, are they really promoting walcyng?

5 THE ROLE OF SAFETY

The individual risk for walcers is rather high when compared to the individual risk for car drivers. It would, of course, be a problem, if one made a lot of people change to walcyng instead of driving a car and then accident numbers were to go up.

There are some results that indicate that, without any extra precautions, accident numbers would not go up linearly if the number of walcers increased considerably (Pasanen 1992 and 1997, Ekman 1996, Varhelyi 1996; see table below). Moreover, there is an indication that there are safety enhancing measures for walcers that would, at the same time, make walcyng more attractive.



6 CONCLUSIONS AND NEEDS FOR FURTHER RESEARCH

6.1 HOW TO ENHANCE WALCYNG INSTEAD OF SHORT CAR TRIPS?

Fig. 1. Bicycle risk in different countries (Graph: Hyden et al. 1997)

This was, in fact, the main goal of the work in WALCYNG. What can be said very shortly is that such an effort demands a multidisciplinary approach where different types of efforts are combined: If you have good walcyng facilities but the road users do not know or believe this then you will have far from as many walcers as you want to have. If you tell people to walce and even convince them with arguments and good advertising, but if they then come to the conclusion that they were not told the truth, because walcyng facilities were worse than promised, then this would also deter people from walcyng.

6.2 THE FUNCTION OF RESEARCH IN THE AREA

Research in this area is to a large degree dealing with a societal subject in change, wanting change. Developmental work is therefore badly needed. The attractiveness of walcyng facilities depends on the perspective that the users take. Such a perspective is context related. It depends on the comfort users perceive when they set a certain behaviour, on values that they believe in, on the experienced fairness of the preconditions that are connected to the behaviour etc. All of these variables change over time, due to a change of perspectives which is partly driven by communication in the society: Whether people appreciate to try to change their own behaviour or not depends on how well and honestly they are informed, on how respectfully and consistently they are treated, on how well and convincingly the necessity of a change is explained, on the fairness of the rewards for ones own attempts, and on the fairness of the distribution of efforts among groups and individuals in society. The scientific job, thus, is to understand, to describe, and to communicate, more than to measure and to construct.

6.3 RESEARCH NEEDS

6.3.1 MANAGEMENT AND IMPLEMENTATION RESEARCH

Technical solutions to provide safety and to fulfil the needs of the target groups do exist. The problem, though, is to find out why certain solutions are not implemented. According to the research work we have done our assumption is that partly good solutions are not implemented due to organisational and co-ordination problems. Another reason definitely is that structural reasons prevent good solutions from getting implemented (e.g., powerful interest groups that are against certain measures). Research in the areas that we have called "inoculation" and "lobbying" should thus go on and be intensified viz. segmented: E.g., different strategies with respect to different tasks, pilot- and demonstration work that includes evaluation of measures and, connected to this, systematic improvement of methods and measures.

6.3.2 Information about walcyng has to be systematised

Opinions about, attitudes towards, and acceptance of measures to enhance walcyng of different target groups have to be analysed further. Politicians, decision makers, officials, etc. have to be included as target groups (which could not be done in the present frame). As far as contents of research are concerned, the cost aspect should be tackled especially thoroughly. In those work packages where experts were interviewed it was stated more often that a lot of national budget money could be saved if one succeeded in convincing relevant proportions of those who use the car for short trips to walce instead.

6.3.3 DEMONSTRATION PROJECTS

Many measures and solutions, including good ones, have never been evaluated thoroughly. Evaluation would make the advantages of such measures much clearer. Therefore, it is necessary that opportunities are created to demonstrate the advantages of suggested measures. This can be done best in the frame of pilot- and demonstration projects. Moreover, such projects are also necessary in order to test and adjust network - or holistic - approaches, where solutions on different levels and in different areas are combined, in such a way that their contribution to success can be assessed systematically.

Demonstration projects should also include co-operation with big companies and institutions. Especially, co-operation with public institutions should be attempted. Projects together with private companies have already been done (see WP8) and it has been shown, there, that measures taken in such a context have the potential to influence modal choice in the wished-for way. The fact that even other EU-projects, like ADONIS, have produced material and know-how in this area from different points of view widens the possibilities for demonstration work and opens a promising perspective on the European WALCYNG scene in the future.

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BEST PRACTICE TO PROMOTE AND SECURE CYCLING AND WALKING

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BEST PRACTICE TO PROMOTE AND SECURE CYCLING AND WALKING

The ADONIS project (*Analysis and Development of New Insight into Substitution of short car trips by cycling and walking*) has as a general goal to suggest methods or guidelines for substitution short car trips in urban areas with cycling and walking.

The project has among others resulted in a catalogue of best practice to promote cycling and walking, which includes examples of what Several European countries have done to improve the conditions and facilities for cyclists and pedestrians in urban areas. Both examples suitable for towns with a less -, a relatively -, and a well-developed pedestrian and/or cyclist net are included.

The paper will include a presentation of selected pedestrian and cyclist measures from the catalogue of Best practice to promote cycling and walking.

„BEST PRACTICE“ FÜR DIE FÖRDERUNG UND SICHERHEIT DES FAHRRAD- UND FUSSGÄNGERVERKEHRS

Das Projekt ADONIS, das der Gewinnung neuer Erkenntnisse bezüglich der Ersetzung von Kurzstreckenfahrten mit dem PKW durch Radfahren oder Gehen gewidmet ist, hat als allgemeines Ziel die Empfehlung von Methoden oder Richtlinien für die Ersetzung von Kurzfahrten mit dem Auto in städtischen Gebieten durch Gehen oder Radfahren.

Das Projekt hat als Ergebnis unter anderem einen Best Practice-Katalog für die Förderung des Gehens und Radfahrens gezeitigt, der auch Beispiele dafür vorstellt, was verschiedene europäische Länder unternommen haben, um die Bedingungen und Einrichtungen für Radfahrer und Fußgänger in städtischen Gebieten zu verbessern. Beispiele, die sich für Städte mit wenig, mäßig und gut entwickelten Fußgänger- und/oder Fahrradverkehrsnetzen eignen, werden präsentiert.

Das Referat umfaßt auch eine Präsentation ausgewählter Maßnahmen zugunsten von Fußgänger und Radfahrer aus dem „Best Practice“-Katalog für die Förderung des Gehens und Radfahrens.

NAJBOLJŠA PRAKSA ZA PROMOCIJO IN ZAVAROVANJE KOLESARJENJA IN HOJE

Splošni cilj projekta ADONIS (analiza in razvoj novih vpogledov v zamenjavo kratkih poti z avtomobilom s kolesarjenjem in hojo) je svetovati metode in usmeritve za zamenjavo kratkih poti z avtomobilom v urbanih naseljih s kolesarjenjem in hojo.

Rezultat projekta je bil med ostalim tudi katalog najboljših praktičnih izvedb za promocijo kolesarjenja in hoje ter vključuje primere, kaj so naredile številne evropske države za izboljšanje pogojev in možnosti za kolesarje in pešce v urbanih naseljih. Dodani so primeri tako za mesta z malo razvitima, kot za relativno dobro in dobro razvitima mrežama za pešce in/ali kolesarje.

Referat vsebuje predstavitev izbranih razmerij pešcev in kolesarjev iz kataloga Najboljša praksa za promocijo kolesarjenja in hoje.

ENGLISH

DEUTSCH

SLOVENSKO

BEST PRACTICE TO PROMOTE AND SECURE CYCLING AND WALKING

INTRODUCTION

How can short car trips in cities be substituted by cycling and walking? The promotion of bicycle and pedestrian traffic is a theme, which has for the past few years been in focus of international research - and more recently in the EU project ADONIS (Analysis and Development Of New Insight into Substitution of short car trips by cycling and walking).

A growing interest in European countries to promote cycling and walking in urban areas increase the demand for examples of good practice to promote and secure bicycle and pedestrian traffic. As a part of the European research project ADONIS a catalogue presenting more than 100 examples from Denmark, the Netherlands, Spain and Belgium has been worked out. This paper presents a few of the examples included in the catalogue.

WHAT KIND OF MEASURES IS PRESENTED IN THE CATALOGUE?

The catalogue presents both infrastructural and non-infrastructural examples of how to promote and ensure bicycle and pedestrian traffic. Examples of infrastructural measures are good bicycle tracks and crossing facilities, whereas examples of non-infrastructural measures concern rules and regulations, and public information and education.

The facilities presented all aim at making it more attractive for people who drive cars to start cycling and walking, while at the same time will be beneficial to people who are already cycling and walking.

Included are examples of measures which are best suited to cities which have up till now not put much emphasis on pedestrian and cycling provisions, and more advanced measures suited to cities that already have a well developed bicycle and/or pedestrian network. Both, measures dedicated to pedestrians and measures dedicated to cyclists have been selected on a number of criteria:

- Is the measure attractive and does it make the trip shorter or quicker?
- Does the measure stimulate walking or cycling?
- Is the measure cost effective?
- Does it encourage safety or social safety?

Each example in the catalogue includes; a short description, dimensions, different aspects for cyclists, different aspects for non-cyclists, additional comments when available, and if possible costs. As a source for further information about the measure, names of publications or organisations are indicated. In addition, most of the descriptions are accompanied by illustrations such as photos and drawings.

HOW TO SELECT A SUITABLE MEASURE

All examples of measures included in the catalogue have been registered according to different criteria, from which relevant and suitable measures can be selected. The classification criteria involves among others:

- Regulations and guidelines, recommendations, suggestions and possibilities
- Infrastructural measures (road sections, junctions, other) (see Example 1 and 2)
- Non-infrastructural measures (signalling and signs, policy and implementation plan, etc.)
- Measures to benefit the visually disabled, physically disabled, children and elderly
- Effect of cyclist measure on walking (positive, neutral, and negative)
- Effect of pedestrian measure on cycling (positive, neutral, and negative)
- Measures suitable for places with low facility density and small share of cycling or walking
- Measures suitable for places with medium facility density and medium share of cycling or walking
- Measures suitable for places with high facility density and large share of cycling or walking

Tables of classifications can be found in the beginning of the catalogue and makes it possible to enter the catalogue in several ways dependent on specific topics.

EXAMPLE 1 - RECESSED STOP-LINE IN CARRIAGEWAY

One way to find examples of measures relating to junctions and crossings could be to enter

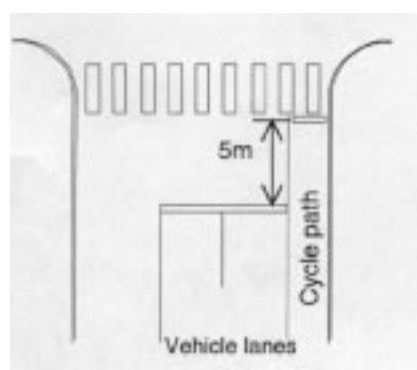
Table 1. This table illustrates a simple subdivision of infrastructural measures involving road sections, junctions and crossings, or other aspects.

Table 1. Infrastructural measures classified according to location (road sections, junctions/crossings, other)

	Road sections	Junctions and crossings	Other
Pedestrians	P-02, P-04, P-06, P-07, P-13, P-32, P-33	P-16, P-17, P-20, P-23, P-25, P-26, P-27, P-30	P-01, P-03, P-05, P-08, P-09, P-10, P-12, P-14, P-31
Cyclists	C-01a, C-01b, C-04, C-05, C-06, C-07, C-08, C-10, C-11, C-12, C-13, C-14, C-17a, C-17b, C-18	C-19, C-20, C-21, C-22, C-23, C-24, C-25, C-26, C-27, C-28, C-29, C-30, C-31, C-32	C-02, C-09, C-10, C-33a, C-33b, C-34a, C-34b, C-36, C-38

Measure C-25 (short for Cyclist measure no. 25) *Recessed stop-line in carriageway* is a Danish example illustrating the benefit of recessing the stop-line in the vehicle lane of signalised junctions:

The recessed stop-line is used at signalised junctions with extended cycle tracks. The measure is intended to reduce the number of accidents between cyclists going straight ahead and vehicles turning right.

**Figure 1.** Dimensions

The dimensions appear from Figure 1. The vehicle stop-line has been recessed five metres relative to the cyclists' stop-line. The reason for choosing five metres is based on a Danish study concerning angles of visibility of trucks. The study shows that cyclists have to be either more than four metres in front of or more than two metres behind the truck to be visible to the truck driver.

The underlying idea of the measure is to improve the visibility of cyclists, primarily to vehicles turning right at the junction when both parties start after having waited at red light. Thus, this measure is primarily intended to reduce the number of accidents between cyclists travelling straight ahead and vehicles turning right.

The design is presumably advantageous to crossing pedestrians too, as they get a better overview and more time to evaluate the intentions of motorists at signal changes. Waiting pedestrians who starts entering the crossing in the beginning of the green light period will be in the crossing before the right-turning vehicles, and are therefore more visible to these vehicles. Moving the stop-line will normally not result in any extension of the inter-green intervals in the traffic light sequence, because these intervals mainly are determined by the calculated time by which pedestrians and/or cyclists need to cross the junction safely.

A Danish study concludes that the recessing of vehicle stop-lines increases the safety of cyclists at signalised junctions with extended cycle tracks. The analysis of accidents reveals that recessed stop-lines reduce the number of accidents between cyclists travelling straight ahead and vehicles turning right by 35%. The results are based upon a limited number of accidents. The benefits by recessed stop-line are also supported by a Swedish behaviour study.

The initiative itself is relatively old, but up till 1993, it has only been used to a very limited degree. Today, the initiative is used consistently on all trunk roads and furthermore in several cities around the country. It is most often a fairly cheap measure, as only removal of the old stop-line and addition of a new stop-line of thermoplastic is needed.

EXAMPLE 2 - SPEED REDUCING MEASURES FOR TRAFFIC IN GENERAL

Another example that can be found from Table 1 is the Belgian example of a zone 30 area (P-14, short for Pedestrian measure no. 14).

In Brügge the whole inner city has been converted into a "zone 30" area. The area consists of an area with diameter of about 2 km, clearly limited by the medieval boundaries. The 30-km/h limit was imposed together with measures to decrease car use and promote bike and public transport, and accompanied by an information campaign.

Most of the streets in the area are narrow (less than nine metres from wall to wall, but this is not a general rule. Safety is obviously increased for pedestrians and for cyclists as well, both objectively and subjectively. The cost effectiveness was very high for the "zone 30" as such, since only traffic signs had to be posted at the gates of the inner city. However, the accompanying measures were more expensive: the city paid for more public transport and did an extended public awareness campaign.



Figure 2. "Zone 30" in Brügge

EXAMPLE 3 - CAMPAIGN : "INITIATIVE RED CROSSES"

In a table involving a subdivision of non-infrastructural measures a Danish example of increasing awareness can be found (C-48). One example of a successful and understandable campaign which have been discussed a lot in public is the Danish national campaign "Initiative Red Crosses".

The strategy of the campaign was to put focus on bicycle accidents exactly at the spots where cyclists are hit by a car. Therefore, red crosses were painted on the pavement of the junctions during the campaign period, - as a warning and request to all road users to look out. The red crosses were painted approximately two metres 'into' the junction, which is where most accidents happen.

To further attract the attention at the junctions, three different roadside posters were designed to give good advice to cyclists and car drivers. Posters were designed with or without 3D-effects. The advice on the posters was "Get eye contact", "Check your blind spots", and "Look into the eyes of the car driver". The road side posters should make both cyclists and car drivers aware that they have a responsibility towards the other party, and just as important - to behave safely.

To ensure that the campaign reached as many people as possible, a leaflet was distributed to all households concerning information about the dangerous situations and how cyclists can avoid being hit by cars. The function of the leaflet is to explain to the reader how to avoid the dangerous situations at junctions. The leaflet was designed so that its shape turned into a junction when the reader opened it. Not until the last part of the leaflet was opened, the reader could see a "Scratch-and-Win plate". The advertisement about Initiative Red Crosses was directed at schools, teachers and the general public, to explain the meaning behind the roadside posters and the red crosses painted on the road.

The red crosses are 90 x 90 cm, and the "legs" of the crosses 30cm wide. The crosses were painted two metres into the junction where most conflicts/accidents happen.



Figure 3. A red cross located at the conflict point between the turning vehicles and straight on-going cyclists in the junction

The campaign could be criticised for being directed too much at cyclists and not enough at car drivers. After all, it is the car drivers' responsibility to watch cyclists going straight ahead. The entire nation-wide campaign cost approximately 480,000 ECU.

FINAL REMARKS

The combined pedestrian and cyclist catalogue is the first of its kind. For cycling measures, certain international catalogues have been published, but for pedestrians, no European comprehensive work has yet been worked out. It appears that cycling organisations stand up for their rights and voice their interests better than the pedestrian organisations. This might also be the answer to why pedestrian measures seldom are evaluated compared to cyclist measures.

The catalogue Best practice to promote cycling and walking mainly contains single measures in spite of the fact that facilities at the level of the transport network and routes can be very important for stimulating cycling and walking. A catalogue like this will never be complete; other measures are conceivable, and there is more to report about each measure.

It must be emphasised that the measures described always should be adapted to local conditions and legislation. This is due to the fact that differences in legislation, road markings, designs and, perhaps more importantly, that the behaviour and the assemblage of different types of road users differs between countries.

Further research in pedestrian and cyclist conditions is of great importance to understanding what can be done to improve the conditions and traffic safety for the vulnerable road users in the future.

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CYCLISTS AND PEDESTRIANS, INDIVIDUAL COMBAT OR ALLIANCE ?

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ENGLISH

CYCLISTS AND PEDESTRIANS, INDIVIDUAL COMBAT OR ALLIANCE ?

Cyclists and pedestrians have a lot in common and mostly, they both seek for safety against growing motorised traffic. As their speed differs and sidewalks are mainly designed for walking, cyclists are perceived as intruders.

In Switzerland, cyclists are considered part of the traffic and therefore they should ride on the street. Planners usually design facilities on the pavement but sometimes, the sidewalk is the only option.

One can observe that cyclists feeling unsafe on the street will use the sidewalk anyway (authorised or not as can be observed in the video).

Different recommendations can be made regarding the surface, the activities, the type of users, etc. Behaviour and safety aspects will be studied from pedestrian and cyclist point of view.

DEUTSCH

RADFAHRER UND FUSSGÄNGER - EINZELKÄMPFER ODER VERBÜNDETE?

Radfahrer und Fußgänger haben vieles gemeinsam. Beide Gruppen streben zumeist nach Sicherheit im steigenden motorisierten Verkehrsaufkommen. Da sie sich aber mit unterschiedlicher Geschwindigkeit bewegen und die Gehsteige hauptsächlich für die Fußgänger ausgelegt sind, werden die Radfahrer als Eindringlinge betrachtet.

In der Schweiz werden die Radfahrer als Teil des Verkehrs betrachtet und sollten deshalb auf der Straße fahren. Die Planungsexperten entwerfen normalerweise Einrichtungen auf der Straße, doch manchmal ist der Gehsteig die einzige Möglichkeit.

Man kann beobachten, daß Radfahrer, die sich auf der Straße unsicher fühlen, (erlaubterweise oder verbotenermaßen, wie im Video zu sehen ist), auf jeden Fall den Gehsteig benutzen.

Bezüglich der Fläche, der Aktivitäten, der Benutzertypen etc. können unterschiedliche Empfehlungen abgegeben werden. Verhalten und Sicherheitsaspekte werden vom Standpunkt des Fußgängers und des Radfahrers aus betrachtet.

SLOVENSKO

KOLESAJJI IN PEŠCI, SPOPAD POSAMEZNIKOV ALI ZAVEZNIŠTVO?

Kolesarji in pešci imajo veliko skupnega in večinoma oboji težijo zoper naraščajoč motorizirani promet. Ker se njihove hitrosti razlikujejo in so pločniki večinoma oblikovani za pešce, ti na kolesarje gledajo kot na vsiljivce.

V Švici predstavljajo kolesarji del prometa in bi zato morali voziti po cesti. Načrtovalci običajno predvidijo kolesarsko stezo, toda včasih je pločnik edina možnost.

Opazimo lahko, da se kolesarji počutijo nezaščitene na ulici in zato kljub vsemu uporabljajo pločnike (po pravici ali ne, kot prikazuje videoposnetek).

Glede na različne površine, dejavnosti, vrsto uporabnikov idr. je možno postaviti različna priporočila.

Vidike obnašanja in varnosti si bomo ogledali iz zornega kota pešca in kolesarja.

THURSDAY

CYCLISTS AND PEDESTRIANS: ENEMIES OR BROTHERHOOD ?

SITUATION IN GENEVA

In Geneva, we have 180'000 inhabitants living in the City, 350'000 in the built-up area, and the very high ratio of 110 inhabitants and 100 jobs per hectare [2,47 acres]. Furthermore, the Canton of Geneva is the most motorized of all the Swiss Cantons (ca 500 vehicles for 1000 inhabitants) and the pressure of car traffic on the existing road system is particularly heavy.

For several years, the City of Geneva has been successfully building up a network of bicycle lanes. Thus, in the space of 10 years, 60 km of roads and streets have been planned to accommodate cyclists and a campaign to encourage cycling has been in place since 1995. The results speak for themselves: between 1987 and 1997 bicycle traffic increased by over 130%!

Under Swiss law, cyclists are not allowed to ride on the pavement or inside pedestrian precincts. During the period 1991-1993, six pedestrian areas in Geneva were, after much hesitation, opened up to cyclists — namely, a short stretch of the "Rues Basses" (the main down-town shopping thoroughfare); pathways in urban parks; a school playground; and a pavement running alongside a steep and very busy road outside the city. Those opposing the scheme at that time included the Police, parents worried about their children's safety, and the Geneva Pedestrians' Association, who feared that the idea might spread, but when three more areas were made available to cyclists between 1995 and 1998, there was much more understanding all round. Nevertheless, each case had to be carefully prepared and substantiated.

OBSERVATIONS RECORDED AND ANALYSED

Cyclist/pedestrian cohabitation was observed in four typical situations: pavements alongside a very busy major road (example 1); a street in a shopping thoroughfare used by pedestrians and public transport (example 2); walkways along a lake embankment (example 3); a very busy avenue with a mixed cyclist/pedestrian zebra crossing (example 4). Observations were conducted as follows:

- rush-hour counts to record pedestrian/cyclist density and evaluate cohabitation quality (21 hours' observation spread over 9 locations);
- video recordings, made at both ground-level and elevation and at different peak times, which were analysed for behavioural pattern (3 1/4 hours of useable material).

The results have been discussed with the Geneva Pedestrians' Association in order to take account of their views of the problems involved.

Lessons and conclusions have been drawn from the observations as a whole, but only the results of the two most enlightening examples are discussed here.

EXAMPLES 1 AND 2 - RESULTS

"Pont du Mont-Blanc" pavement (Example 1)

With 6 traffic lanes and more than 80'000 vehicles crossing it every day, the "Pont du Mont-Blanc" is one of Geneva's most dangerous roads for cyclists, which is why 50%-60% of them prefer to ride on the pavement which overlooks the lake.

This pavement has a width of 2.50 -3.00 metres and is separated from the traffic by a barrier; 10-12 pedestrians and 1-2 cyclists go along it every minute (cf figure 1). On weekdays, during the morning/evening rush hours, a cyclist has either to give way to a pedestrian or force a pedestrian to do so every 30 seconds.

Of the total observations analysed (i.e., 197 instances of crossing and/or overtaking during evening and/or morning peak hours), there was a noticeable change in the behaviour of the cyclist and/or the pedestrian in 74 cases. However, as may be seen from tables 1 and 2, in most instances it was the cyclist who gave way. Nevertheless, instances of real "clashing" or inconvenience (being forced to stop, for example) were rare.

A hundred and forty-six instances of crossing and 74 of overtaking were examined (cf table 3). In the case of crossings, when both parties could see each other, they changed course in good time, so that the cyclist was obliged to move out of the way or slow down in only a third of the cases. However, when a cyclist was overtaking pedestrians, he obviously had to adapt his behaviour more often. It is surprising to note from the video recording that pedestrians are frequently aware of a cyclist's presence without actually seeing or hearing him.

The size of a group of pedestrians also has a direct influence as to whether a cyclist gives way or not: 10% when there is only one pedestrian, 30% when there are two pedestrians, 70% when there are three and 90% when there are four or more. Analysis according to the space available for a cyclist to pass gives similar results (cf. figures 3). If there is more than a metre of space, then it is nearly always the cyclist alone who steps aside (89%) and the pedestrians take precedence. When there is no room for a cyclist to overtake, he slows down and waits until the group crosses another pedestrian before moving forward. Only very occasionally does he actually get off and push his bike, or ring the bell, to force his way through.

"Rues Basses" (Example 2)

The "Rues Basses" constitute the main shopping thoroughfare for pedestrians in the centre of the city. Although forbidden to cyclists for much of its length, there are nevertheless more than two cyclists every minute (cf figure 2).

Because the area is also served by public transport (15 buses and 20 trams an hour on Saturdays), pedestrians usually keep to the pavements except on Saturdays, when there are big crowds. Cyclists prefer to ride in the centre of the road, despite the hazard of the tramlines and the fact that the pavements are wide (8 and 4 metres, respectively). The dissuasive factor, in fact, is the pedestrian density (40-50 pedestrians per minute during the week and 300-400 p/min on Saturdays).

"Clashes" of interest between cyclist and pedestrian occurred only when people were crossing in the middle of the road and even these were few in number because the traffic flow is perpendicular. At peak hours on Saturday afternoon, there was, on average, a change in behaviour on the part of a pedestrian or a cyclist every 30 seconds.

Of the 29 clashes analysed, the cyclist swerved in almost half of the cases and slowed down noticeably in almost two-thirds of the cases, but never actually came to a stop with his foot on the ground (cf. tables 1 and 2).

In contrast to the observations made on the "Pont du Mont-Blanc", cyclists in the "Rues Basses" were more bothersome to pedestrians because of the perpendicular traffic flow (there is either a clash or not and only rarely a change in direction or speed).

Pedestrian dominance was less apparent. The fact that they are riding alongside the buses and trams in the middle of the traffic lanes tends to give the cyclists a psychological advantage, even though the "Rues Basses" are considered to be a priority zone for pedestrians.

LESSONS AND CONCLUSION (ALL OBSERVATIONS)

- *Cohabitation is becoming more of a de facto situation but the pedestrian still takes precedence*

Cohabitation between pedestrians and cyclists is becoming more frequent in many of the zones officially reserved for pedestrians. In the situations observed, up to 50 cyclists an hour infringed the law, but their behaviour was remarkably respectful and the bicycle's lack of noise did not prevent its cohabitation with the pedestrians.

On the "Pont du Mont-Blanc", more often than not it was the cyclist who gave way. He stopped pedalling, swerved, slowed down and was ready to brake. The cyclist tacitly and spontaneously gave way to the pedestrian. It was only as a last resort that the pedestrian stepped aside or stopped — for example, when there was not enough room to pass. But it was rare for a cyclist to put his foot on the ground, even when a group blocked the pavement.

In the "Rues Basses", public transport prevents pedestrians from taking full possession of the middle of the road, which is where the cyclists ride. Even though the cyclists move at very moderate speeds, pedestrians are noticeably less dominant.

Cyclists are very conscious of pedestrian density and their speed is rarely more than it should be. Pedestrians, on the other hand, usually only give way when there is not enough room for a cyclist to pass.

- *Roller-skaters and cyclists: a similar inconvenience, but different regulations*

Legally, cyclists are forbidden to ride on the pavement, but roller-skaters have to use the pavement. However, pedestrians appear to feel more threatened by roller-skaters than by cyclists.

- *Signposting and marking are not enough to designate zones*

The separation of spaces reserved for cyclists and pedestrians is not particularly well respected by anyone. On the "quai Wilson" (example 3), pedestrians walk along the cycle lanes. On the "Pont des Bergues" (which is reserved for pedestrians and cyclists), the central area has been marked off by additional kerbs, but the pedestrians still take up the entire width of the bridge. In the "Rues Basses", pedestrians have priority but avoid the middle of the road because of the trams and buses.

Thus, it may be concluded that when there is no public transport or taxi traffic, signs are superfluous inside pedestrian and cycling precincts, but they are needed to indicate where the precinct begins and ends.

• *Cohabitation between pedestrians and cyclists can be viable but should not be extended*

Cohabitation can make planning simpler and more accommodating, and it gives people a sense of responsibility, as the fieldwork shows. Nevertheless, while cyclists caused little disturbance in the situations we observed, their presence was, in actual fact, an additional stress factor for the pedestrians. From the cyclist's viewpoint, riding on the pavement is far from ideal, because he cannot move at his normal speed. Thus, in the Swiss context, cohabitation on pavements should remain the exception and the redistribution of traffic lanes to ensure the cyclist's safety should be the rule.

• *Cyclists are not always aware that they are breaking the law in pedestrian precincts*

Cyclists are only allowed to ride on one stretch of the "Rues Basses" in one direction (example 2), but many of them cycle in both directions all over the shopping area. The absence of a physical "barrier" and the fact that there is permanent excessive infringement nullify the ban despite very clear sign-posting. Often, it is the cyclists who bring about a change in the law. They ride in pedestrian precincts which are forbidden to cyclists and eventually the occasional rebukes of the Police yield to the acceptance of a fait accompli.



Figure 1: "Pont du Mont-Blanc", a narrow pavement which cyclists prefer to the dangers of the 6-lane traffic on the bridge



Figure 2: "Rues Basses", extreme density, but spontaneous segregation

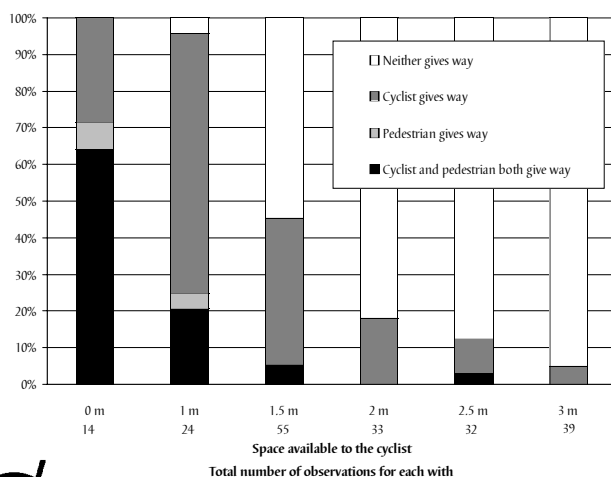


Figure 3: Behaviour pattern, according to the space available to the cyclist (Pont du Mt-Blanc)

Table 1: In a "clash" situation, who gives way ?

Type of behaviour	Mt-Blanc (example 1)		R. Basses (example 2)	
Pedestrian and cyclist both give way	18	24%	11	49%
Pedestrian gives way to the cyclist	2	3%	4	15%
Cyclist gives way to the pedestrian	54	73%	14	40%
Total	74	100%	29	100%

Established on the basis of 197 observations (with or without clash) on the Pont du Mont-Blanc and 29 clash situations in the Rues Basses

Table 2: In a "clash" situation, how does the person give way ?

Type of behaviour	Mt-Blanc (example 1)		R. Basses (example 2)	
Cyclist swerves	19	21%	6	15%
Cyclist slows down	29	32%	11	28%
Cyclist swerves and slows down	23	25%	8	20%
Cyclist stops	1	1%	0	0%
Pedestrian steps aside	19	21%	7	18%
Pedestrian stops	1	1%	8	20%
Total	92	100%	40	100%

**Table 3: To see or be seen: is behaviour the same?
(example 1, pavement of the Pont du Mont-Blanc)**

Type of behaviour	Crossing		Overtaking	
Cyclist gives way to the pedestrian	32	22%	36	47%
Pedestrian gives way to the cyclist	2	1%	0	0%
Cyclist and pedestrian both give way	16	11%	8	11%
Neither gives way	96	66%	31	42%
Total	148	100%	74	100%

Each observation involves an instance of crossing and/or of overtaking. Each crossing or overtaking involves one or several pedestrians or cyclists.

A THREEFOLD CLASSIFICATION OF FRENCH CYCLISTS: A SLIGHT LESSENING OF THE DOWN MARKET IMAGE OF THE BICYCLE.

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A THREEFOLD CLASSIFICATION OF FRENCH CYCLISTS: A SLIGHT LESSENING OF THE DOWN MARKET IMAGE OF THE BICYCLE.

We have classified French cyclists according to data from the French national transport surveys. Cyclists that cycle for taking exercise form the *sport class*. Other cyclists who have the possibility of driving their car for the same trips are called *option cyclists*. All other cyclists are *usual cyclists*. These three classes have specific demographic and social characteristics, which reveal different motivations for cycling. Purposes for travelling by bike are increasingly recreational (visits, leisure, sport) and less and less utilitarian (education, work, purchases). Nevertheless, utilitarian cyclists may develop, either for economical reasons, or as a genuine choice for people having access to a motor vehicle.

EINE DREIFACHE KLASSIFIZIERUNG FRANZÖSISCHER RADFAHRER EINE LEICHTE ERHOLUNG DES ANGESCHLAGENEN MARKTIMAGES DES FAHRRADS

Wir haben die französischen Radfahrer auf der Grundlage von Daten aus den nationalen französischen Verkehrserhebungen klassifiziert. Diejenigen Radfahrer, die radfahren, um Bewegung zu machen, bilden die Klasse der Sportler. Andere, die die Möglichkeit haben, dieselbe Strecke auch mit dem Auto zurückzulegen, nennen wir die „Radfahrer aus eigenem Willen“. Alle anderen Radfahrer sind Gewohnheitsradfahrer. Diese drei Klassen zeichnen sich durch jeweils spezifische demographische und soziale Charakteristika aus, die unterschiedliche Motivationen für das Radfahren erkennen lassen. Der Zweck des Radfahrens ist zunehmend dem Bereich der Freizeit zuzuordnen (Besuche, Freizeit, Sport), während immer weniger Menschen das Fahrrad als eigentliches Verkehrsmittel (Schulbesuch, Arbeit, Einkaufen) nutzen. Trotzdem wählen immer wieder Menschen das Fahrrad als ihr reguläres Verkehrsmittel, und zwar entweder aus wirtschaftlichen Gründen oder, bei Personen, die Zugang zu einem Auto hätten, aus echter Überzeugung heraus.

TRODELNA KLASIFIKACIJA FRANCOSEKIH KOLESARJEV: ZMANJŠEVANJE PREZIRLJIVEGA ODNOSA DO KOLESA

Francoski kolesarji so bili razvrščeni v skladu s podatki iz raziskav o francoskem državnem prevozu. Kolesarji, ki kolesarijo za rekreacijo, predstavljajo športni razred. Drugi kolesarji, ki imajo možnost, da iste poti opravijo z avtomobilom, so poimenovani priložnostni kolesarji. Vsi ostali so običajni kolesarji. Te tri skupine imajo specifične demografske in družbene značilnosti, ki odkrivajo različno motivacijo za kolesarjenje. Nameni potovanja s kolesom postajajo vse bolj rekreacijski (za obiske, zabavo, šport) in vse manj utilitarni (za izobraževanje, službo, nakupe). Kljub temu pa se lahko razvijejo kolesarji iz potrebe, bodisi zaradi ekonomskih razlogov, ali pa kot dejanska izbira tistih, ki imajo možnost motoriziranega vozila.

ENGLISH

DEUTSCH

SLOVENSKO

A THREEFOLD CLASSIFICATION OF FRENCH CYCLISTS: A SLIGHT LESSENING OF THE DOWN MARKET IMAGE OF THE BICYCLE.

1. INTRODUCTION

This research is part of the ECO-MOBILITY project, addressing the issue of non motorized urban travel, conducted jointly by 4D (association for sustainable development), IFRESI (research institute in industrial economics) and INRETS (research institute on transportation). The project as a whole (by J.R. Carré in workshop D8), and different parts of it, are presented elsewhere in this conference (L. Comélieau, B. Dahm, V. Lauriola in workshop A3; F. Héran in workshop C5; J.R. Carré, C. Germain, J.J. Denis in workshop D5).

This paper focuses on bicycle mobility in France. Our main data are provided by the national transport surveys (INRETS-INSEE) in 1981-1982 and 1993-1994. All statistics hereafter will deal with trips made by persons aged 6 and older within 80 kilometres of their homes located in France. Bicycle travel has declined in France during this 12-year period (see Papon, 1997): its modal share has dropped from 4.24 to 2.73 %. Mobility has been reduced from 0.13 to 0.08 bicycle trip per person per day. Distances ridden have decreased from 102 to 83 kilometres per person per year.

2. DEFINITION OF THE THREE CLASSES

French cyclists have been classified according to these data. Home to home loops have been considered, i.e. the succession of trips between one departure from home and the next arrival back home, and the purposes of those trips. The first task was to distinguish between cyclists who bicycle for its own sake, from cyclists who ride for transportation reasons. The difficulty was that wandering along was not a purpose recorded in the survey. Cyclists performing loops of any distance with the purpose "practising sport", or loops with the purpose "leisure" over a total distance greater than 10 kilometres, form the *sport class*. This results in transportation cyclists going to the swimming-pool, for example, being included, whereas short distance recreational cyclists are omitted.

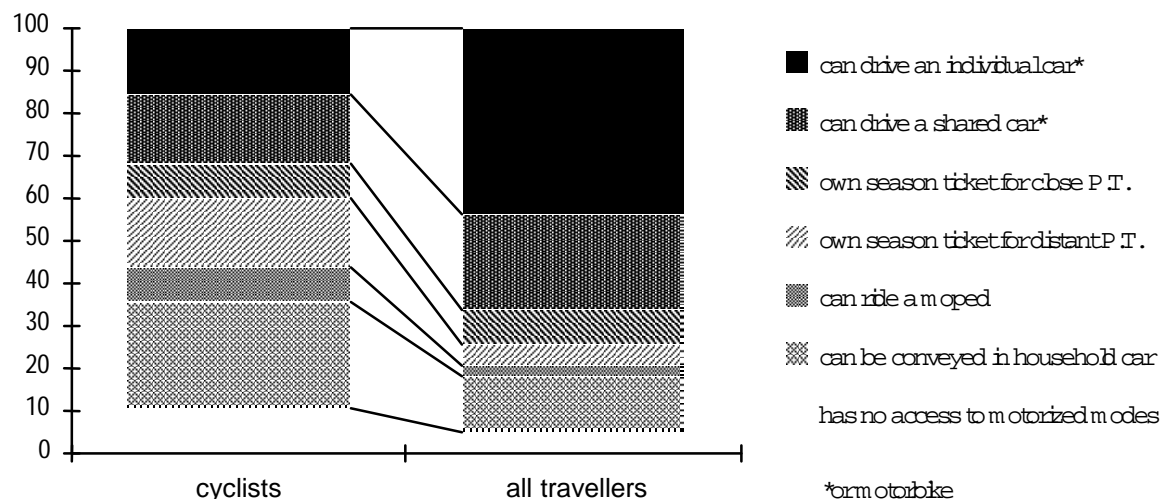
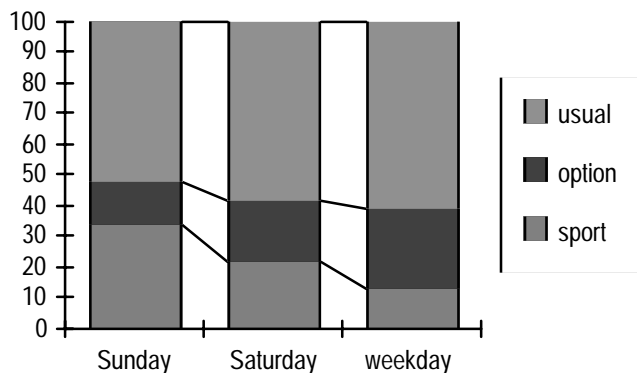


Fig. 1: Modes available to cyclists, as compared to all travellers, on weekdays, in 1993-1994. Modes available have been classified according to a hierarchy (e.g. the potential moped riders who are considered have no car or driving licence and no season ticket).

Other cyclists have been categorized according to the choice of other modes available. Figure 1 shows that the bicycle is more often used when the only other modes available are public transport with the closest station located at more than 300 metres away from the home, or a moped, or when the person needs to ask someone else in the household to convey him/her, or when no motorized mode is available. The main determinant is therefore the ability to drive a registered vehicle. For this reason, cyclists who own a car (or a motorbike), and hold a driving licence, are called *option cyclists*. All other cyclists are *usual cyclists*.

3. USUAL CYCLISTS

We have called usual cyclists persons who travel on a bicycle for a purpose other than sport or long leisure loops, and who do not have the possibility of driving of a car or riding a motorbike.



Distribution of bicycle loops (%)

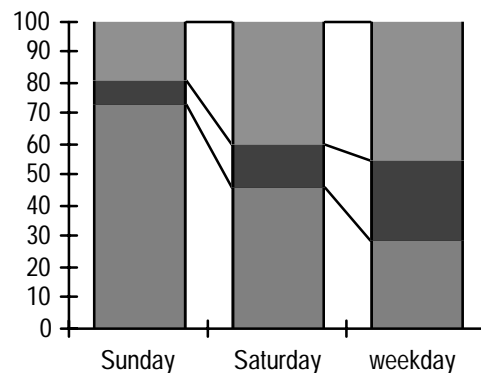


Fig. 3: Distribution of cycling distances (%)

by cyclist class, for different days of the week, in 1993-1994.

These cyclists are the most numerous as shown by figure 2. They represent 61% of bicycle rides during weekdays, 58% on Saturdays, and 52% on Sundays. But their trips are short : 61% of the loops are under 3.1 kilometres, and 94% under 9.9 kilometres during weekdays. On average, these weekday loops are 3.55 kilometres long and last for 25 minutes.

The proportion of women is higher in the usual class than in the group of cyclists as a whole: 44% compared with 36%. Usual cyclists are rather young : 56% are 17 or less. On the contrary, only 14% of these cyclists work, and 12% are retired. They belong more often to households with below average revenues. The main purposes of weekday usual cyclists are visiting relatives and friends (25%), education (23%) and shopping (21%). On Saturdays and Sundays, education no longer figures and leisure grows (45% on Sundays). Usual cyclists are slightly more frequent in the West of France and the Paris Basin, except in Paris centre and inner suburbs. They are scarcer in highly urbanized areas, more particularly in Paris. They are more often met on the periphery of urban areas.

4. SPORT CYCLISTS

We have called sport cyclists those people who ride bicycles for exercise, or leisure for loops longer than 10 kilometres. These cyclists are more numerous during weekends, particularly on Sundays, when they represent 34% of the bicycle loops, but 73% of the distances travelled as shown by figure 3. They make rather long rides : on average 11.1 kilometres, and 62 minutes during weekdays; 20.2 kilometres and 88 minutes on Sundays. They are the fastest cyclists.

They are mainly men (up to 85% on Sundays). On weekdays, they are either young or old : 32% of the distances travelled by children under 14, and 48% by people aged 50 or more. On Sundays, 31% of the distances travelled by sport cyclists are made by riders between 35 and 49 years old. Among these sport cyclists, there are many salaried employees, especially executives, engineers, technicians, foremen, as well as children and retired persons, but few independant workers, unemployed, housewives or students. Sport cyclists are more frequent in île-de-France and the mediterranean regions. They live mainly in the outer suburbs, in remote rural areas, or in town centres.

5. OPTION CYCLISTS

We have called option cyclists persons who ride a bicycle for a purpose other than sport or long leisure loops, and who could have driven a car or ridden a motorbike for that trip, as they have a driving licence and a motor vehicle. Therefore, these cyclists choose to travel on a bicycle for transportation reasons, whereas they could have used a motor vehicle. They represent 27% of the loops travelled on a bicycle during weekdays, but only 14% on Sundays. The distances they travel are in the average range for bicycle trips: their average weekday loop is 4.68 kilometres and 27 minutes long.

They are a majority of men, up to 72% on weekdays. They are in general persons of a working age: 87% are between 25 and 64 years old. Furthermore, they have often an intermediate or executive type of activity. They belong to households with an above average income. The majority of loops made by option

cyclists are linked to work: 54% during weekdays. Shopping, leisure and visiting relatives or friends are naturally more frequent during weekends. Option cyclists live more often in Paris city and inner suburbs, seldom in the outer suburbs. They may also be found in town centres of medium and large provincial employment areas. Obstacles to car traffic and parking may explain their choice here.

6. EVOLUTION OF THE THREE CLASSES

The evolution of the three classes between 1982 and 1994 has been as follows. The share of sport cyclists has increased (by up to 30% on Sundays). Nevertheless, the share of usual cyclists is much higher for people aged 21 to 24, to the detriment of option cyclists, which means that young people can now less afford a car. The reverse is true for persons aged 65 and above, that have become accustomed to the car. Furthermore, an increasing number of executives, technicians, foremen, middle professionals and teachers belong to the option class. For all transportation cyclists, trips for visiting relatives and friends or leisure have increased to the detriment of work, education and shopping.

Fig. 4: Relative revenue of cyclists in 1981-1982

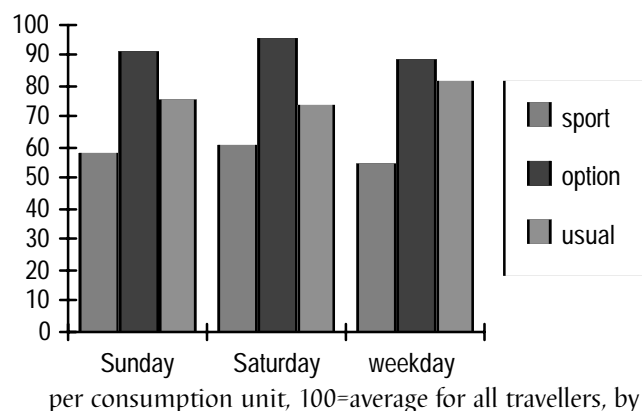
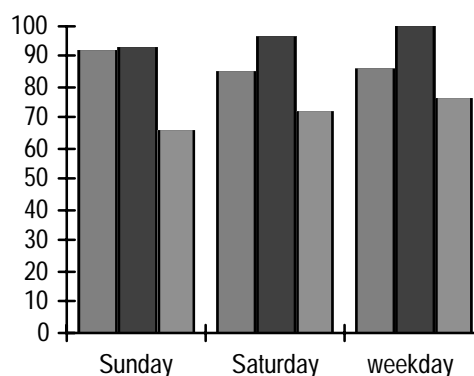


Fig. 5: Relative revenue of cyclists in 1993-1994



per consumption unit, 100=average for all travellers, by cyclist class, for different days of the week.

A study of the revenue of cyclists (see figure 5) shows that cyclists are on average less well-off than other travellers. However option cyclists are the richest, with close to average revenues, usual cyclists the poorest. Weekend transportation cyclists are also less wealthy than their weekday counterparts. The contrary is true for sport cyclists. On average, the evolution of the revenue of cyclists is the same as for other travellers (compare with figure 4). Yet sport and option cyclists have a higher relative income, and usual cyclists have become closer to the bottom of the scale.

7. CONCLUSION

French cyclists are quite diverse: the sport class rides for the pleasure of bicycling; the option class chooses to leave the car in the garage for going to a professional or personal business; the usual class is either too young to get a driving licence, or too poor to afford a car. Purposes for travelling by bike are more and more recreational (visits, leisure, sport) and less and less utilitarian (education, work, purchases), which tends to associate cycling more with health, environment, sociability than with a constraint. Young adults are more and more usual cyclists, which reveals economic motivations for riding a bicycle. On the contrary, the option class counts an increasing number of executives, higher salary earners, which means that the bicycle is less considered as a down-market means of transport.

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URBAN STRUCTURE AND NONMOTORIZED TRAVELLING IN 13 RESIDENTIAL AREAS IN MARIBOR

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UNDERSTANDING AND PREDICTING CYCLISTS' ROUTE CHOICE BY USE OF MODELS

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UNDERSTANDING AND PREDICTING CYCLISTS' ROUTE CHOICE BY USE OF MODELS

In Norway cyclists are allowed to travel "wherever they want", i.e. they can choose whether to use cycling lanes or the driving lanes, as well as using the pedestrian area.

What will then be decisive for the cyclists' choice of route?

To attain more knowledge on this subject, an investigation was conducted among 790 cyclists in the city of Trondheim. The investigation took place as a Stated Preference-survey. The respondents were asked to indicate their route choice towards, through and out of signalised X-junctions with different physical layout for cyclists. As a result, several logit-models were estimated. These models show how cyclists emphasise different aspects when choosing their route. In addition they can be used to predict how the cyclists will be distributed across the available routes. The aspects included in the models are: traffic flow, pedestrian flow, submerged kerb/low kerb, surface quality, age, gender, use of cyclists' helmet, time available, and previous choices made by the cyclists.

This paper reviews the main results and demonstrates through an example what kind of results to achieve when using these logit-models for predictions. Furthermore, the example demonstrates how different groups of cyclists will make different choices in the same situation.

VERSTEHEN UND PROGNOSTIZIEREN DER ROUTENWAHL VON RADFAHRERN ANHAND VON MODELLEN

In Norwegen können Radfahrer fahren, „wo immer sie wollen“, d.h. sie können sich aussuchen, ob sie die Fahrradspur oder eine KFZ-Spur verwenden wollen, und dürfen außerdem die Fußgängerzonen befahren.

Was beeinflusst in dieser Situation die Routenauswahl von Radfahrern?

Um mehr über dieses Thema herauszufinden, wurde eine Studie durchgeführt, an der sich 790 Radfahrer in der Stadt Trondheim beteiligten. Die Untersuchung fand in Form einer „Stated Preference“-Untersuchung statt. Die Teilnehmer wurden gebeten, die von ihnen gewählte Route in, durch und aus X-Kreuzungen mit unterschiedlicher Auslegung für Radfahrer anzugeben. Als Ergebnis dessen wurden mehrere Logit-Modelle erstellt. Diese Modelle zeigen, wie Radfahrer bei der Auswahl ihrer Route verschiedene Aspekte betonen. Zusätzlich können sie verwendet werden, um vorherzusagen, wie die Radfahrer sich über die verfügbaren Routen verteilen werden. Die in den Modellen berücksichtigten Aspekte

sind: Verkehrsfluß, Fußgängerfluß, versenkter Randstein / niedriger Randstein, Oberflächenbeschaffenheit, Alter, Geschlecht, Verwendung eines Radfahrerhelms, verfügbare Zeit und bereits zuvor von den Radfahrern getroffene Entscheidungen. Dieses Referat beschäftigt sich mit den wichtigsten Ergebnissen und zeigt anhand eines Beispiels, welche Art von Resultaten man erzielt, wenn man diese Logit-Modelle für Prognosen verwendet. Außerdem zeigt das Beispiel, wie verschiedene Gruppen von Radfahrern in derselben Situation unterschiedliche Entscheidungen treffen.

RAZUMEVANJE IN PREDVIDEVANJE IZBIRE KOLESARSKIH POTI Z UPORABO MODELOV

Na Norveškem je dovoljeno kolesarjem voziti "kjerkoli želijo", to pomeni, da lahko izbirajo, ali bodo vozili po kolesarskih stezah ali po voznem pasu, kakor tudi po stezah za pešce.

Kaj bo torej vplivalo na kolesarja pri izbiri poti?

Zaradi večjega poznavanja te tematike smo izvedli raziskavo med 790 kolesarji v mestu Trondheim. Raziskava je temeljila na izražanju preferenčnosti. Vprašane smo prosili, da označijo njihovo izbiro poti v križišče, skozenj in iz križišča z različnimi fizičnimi ureditvami za kolesarje. Tako smo predvideli različne modele. Ti modeli prikazujejo, katerim vidikom kolesarji dajejo poudarek pri izbiri svoje poti. Razen tega lahko modele uporabimo za predvidevanje o razporejenosti po možnih poteh. Modeli vključujejo naslednje vidike: pretok prometa, pretok pešcev, nizek/vdolbljeni robnik, kvaliteta površine, starost, spol, uporaba kolesarske čelade, razpoložljiv čas, pretekle odločitve kolesarjev.

Članek daje pregled nad glavnimi rezultati in s pomočjo primera predstavlja, kakšne rezultate pričakovati z uporabo teh modelov. Še več, primer prikazuje, kako se različne skupine kolesarjev v enaki situaciji različno odločijo.

UNDERSTANDING AND PREDICTING CYCLISTS' ROUTE CHOICE BY USE OF MODELS

In Norway cyclists are allowed to travel "wherever they want", i.e. they can choose whether to use cycling lanes or the driving lanes, as well as using the pedestrian area. This makes cyclists very flexible as road-users, but car-drivers and pedestrians do not always appreciate this flexibility, as it makes it hard for them to predict how the cyclists will behave.

In order to design attractive cyclists' facilities, it is important to understand how cyclists make their choices and to study which factors will be decisive for the cyclists' choice of route.

To attain more knowledge on this subject, an investigation was conducted among 790 cyclists in the city of Trondheim. These were cyclists age 13 to 74, the big majority of the cyclists aged 18 to 59, who used bike as a transport mode for journeys to/from work or to/from school. The investigation took place as the empirical part of a doctorate thesis (Ryeng, 1998), and it was conducted as a Stated Preference-survey (SP-survey). An SP-survey uses "...peoples' statements of how they would respond to different situations. ...The common feature of ... SP techniques is their use of experimental designs to construct a series of alternative imaginary situations. Individuals are then asked to indicate how they would respond if these situations faced them in reality."(Permain et.al,1991,p.2).

In this questionnaire survey the respondents were asked to indicate, by drawing, their route choice towards, through and out of signalised X-junctions with different physical layout for cyclists. Each respondent were presented for 16 situations, each of them described through a drawing of the junction and a written description of factors as traffic flow, pedestrian flow and surface quality. As a result of these drawings, several logit-models were estimated. A logit-model estimates peoples' probabilities for choosing different alternatives in a given situation, based on the assumption of people being rational decision-makers. This rationality implies maximising the overall utility for the chosen alternative. The logit-model estimates the choice probabilities by estimating the relative utility for each available alternative by use of specified decision variables in the person's utility-function.

The logit-models estimated in this study show how cyclists emphasise different aspects when choosing their route. The most important factor to determine a cyclist's route choice through a junction is his/hers chosen route towards the junction. If the cyclist approaches the junction in the cycling lane, he/she is most likely to proceed in the cycling lane

through and out of the junction. In addition, the cyclist will be influenced by the traffic flow. In heavy traffic periods the cyclist will prefer the cycling lane or the pedestrian area more frequently than in light traffic periods. The surface quality is also an important factor. The cyclist will, of course, prefer a smooth surface, and is therefore more likely to choose the cycling lane when the surface is clean and smooth rather than when it is rough and suffering from a lack of maintenance.

Other factors, not as important as those mentioned above, are the pedestrian flow and whether there are submerged or low kerb between the cycling or pedestrian area and the crossing area. The survey showed that the cyclist is more likely to choose the pedestrian area when the pedestrian flow is low compared to periods with higher pedestrian density. The presence of a low kerbstone (2-4 cm high) will to some extent lead the cyclist to avoid it, especially when the route includes moving upwards from the crossing area and on to the cycling/pedestrian area.

The choice of route will not depend only upon physical factors, but also upon whom the cyclists are. The survey revealed some main features; young cyclists and male cyclists choose the driving lanes more frequently than older cyclists and female cyclists do. Female cyclists and cyclists who wear a helmet choose the cycling lanes, when these are available, more frequently than male cyclists and cyclists without a helmet do. The models did also include whether the cyclist was in a hurry or not. This aspect did affect the choices to a small extent, but not in a consistent way.

The survey examined four different solutions for cyclists in signalised X-junctions, three of them containing separate lanes for cyclists, both towards, through and out of the junction. The movements of interest in this survey were the routes of cyclists turning left in the junction and cyclists heading straight forward through the junction. As a result of the survey there were estimated all together 134 different logit-models based on almost 34.000 choices.

Evaluations of the logit-models estimated from this survey, indicated that the validity of the survey was high, and this suggested that the models were suitable for predicting the route choice of cyclists. The models were estimated on different levels of aggregation. This gave the possibility both to predict how the cyclists as a whole group and how different subgroups of the cyclists will be distributed across the available routes under various conditions. An example is shown below to demonstrate what kind of results to achieve by using these logit-models.

Example

We are in this example looking upon cyclists cycling straight forward through a signalised junction. The physical layout of the junction can be described in this way: There is a cycle lane between the driving lane and the pavement on both sides of the junction. The cycle lane is lying on the same level as the driving lane, separated from the pavement by kerbstones. The cycle lane is continuous through the junction, next to the zebra crossing.

We want to estimate how the cyclists will distribute across the available routes when crossing this junction. They do have three alternative routes: the driving lane, the cycling lane and the zebra crossing. The distributions of the cyclists will be estimated for several situations. All the estimates are shown in Table 1.

Let us first have a look on a **situation A**. In this situation the distribution for the whole group of cyclists are estimated. The distribution is estimated both for a situation with heavy traffic flow and a number of pedestrians present, and for a situation with low traffic flow and few pedestrians present. The estimates for the first situation are shown in bold letters, and those for the later situation are shown in italic letters. When comparing the estimates for these two situations we can see that the majority of the cyclists choose to cycle in the cycling lane, and that heavy traffic flow makes more cyclists choose the zebra crossing, even if there are a number of pedestrians present.

However, the most important factor to determine a cyclist's route choice through the junction is the route chosen towards the junction. The distribution for cyclists approaching the junction in the driving lane is estimated and shown in **situation B**. **Situation C** shows the estimated distribution for cyclists approaching in the cycling lane, and **situation D** shows the estimated distribution for cyclists approaching on the pavement. These distributions show very clearly that about 80 % of the cyclists continue in the lane used when approaching the junction, independent of which lane they have chosen for approaching.

Table 1: The cyclists' estimated distribution across the available routes when crossing a signalised X-junction. The numbers in bold letters show the distribution in a situation with heavy traffic flow and a number of pedestrians present. The numbers in italic letters show the distribution in a situation with low traffic flow and few pedestrians present.

Situation	Conditions	Distribution		
		Driving lane	Cycling lane	Zebra crossing
A	all the cyclists	8,3/12,7 %	68,5/69,3 %	23,2/18,0 %
B	cyclists from the driving lane	82,7/81,5 %	13,5/15,3 %	3,8/3,2 %
C	cyclists from the cycling lane	3,6/3,3 %	80,1/84,1 %	16,3/12,6 %
D	cyclists from the pavement	1,0/1,1 %	15,3/19,7 %	83,7/79,3 %

By designing a cycling lane through this junction we intended to make a better solution for all road-users. But, as the estimates from Table 1 show, in order to make the majority of cyclists choose the cycling lane through the junction, it is necessary to make them choose the cycling lane when approaching the junction.

Table 2 shows estimated distributions for the cyclists' choice of route towards the junction. The cyclists do have four alternative routes: the driving lane, the cycling lane, the pavement and to fluctuate between the driving lane and the cycling lane. As in Table 1 the distributions are estimated both for situations with heavy traffic flow and a number of pedestrians present, and for situations with low traffic flow and few pedestrians present. The estimates for the first situations are shown in bold letters, and those for the later situations are shown in italic letters.

In this junction there are low kerbstones (2-4 cm high) between the pavement and the zebra crossing. The surface quality is smooth in the driving lane and rough in the cycle lane and on the pavement on both sides of the junction. Under these conditions, how will the cyclists make their choices? **Situation E** in Table 2 shows for the whole group of cyclists the estimated distribution towards the junction at these conditions. As we can see, the percentage of cyclists choosing the cycling lane depends very much upon the traffic and pedestrian conditions.

What will then happen if we submerge the kerbstone and improve the surface quality in the cycling lane and on the pavement? Estimated distribution under these conditions is shown in **situation F**. The estimates show that these improvements will lead to a more uniform distribution across the available routes, less dependent of the traffic and pedestrian conditions, and to a higher percentage of cyclists using the cycling lane.

This far we have estimated the choices of the whole group of cyclists. Now we are going to study two different subgroups of the cyclists to demonstrate the differences between them. The first group consists of male cyclists age 20 without a helmet, and the second group consists of female cyclists age 45 wearing a helmet. The distributions shown in **situation G-J** are estimated for the same conditions as in situation E and F. This example demonstrates that young men are less willing to use the cycling lane compared to grownup women, and that they also prefer using the pavement more frequently.

Table 2: The cyclists' estimated distribution across the available routes when cycling towards a signalised X-junction. The numbers in bold letters show the distribution in a situation with heavy traffic flow and a number of pedestrians present. The numbers in italic letters show the distribution in a situation with low traffic flow and few pedestrians present.

Situation	Condition	Distribution			
		Driving lane	Cycling lane	Pavement	Fluctuate driving/cycling lane
E	low kerbstone, rough surface quality in cycling lane and on pavement - all the cyclists	10,6/50,2 %	79,0/43,1 %	7,8/4,0 %	2,6/2,8 %
F	submerged kerbstone, smooth surface quality in cycling lane and on pavement - all the cyclists	2,3/16,8 %	85,9/72,6 %	10,7/8,4 %	1,1/1,9 %
G	low kerbstone, rough surface quality in cycling lane and on pavement - male cyclists age 20 without helmet	13,3/57,1 %	73,7/35,5 %	9,9/4,5 %	3,1/2,9 %
H	submerged kerbstone, smooth surface quality in cycling lane and on pavement - male cyclists age 20 without helmet	3,0/21,5 %	84,0/67,6 %	11,6/8,7 %	1,4/2,2 %
I	low kerbstone, rough surface quality in cycling lane and on pavement - female cyclists age 45 wearing helmet	6,7/39,2 %	84,3/55,2 %	6,5/4,0 %	1,3/1,7 %
J	submerged kerbstone, smooth surface quality in cycling lane and on pavement - female cyclists age 45 wearing helmet	1,4/11,5 %	90,8/81,5 %	7,2/6,0 %	0,6/1,0 %

All the

situations in Table 2 show very clearly that improved surface conditions on the cycling lane towards the junction leads to a higher percentage use of the cycling lane. This will further on lead to a higher percentage use of the cycling lane through the junction.

This example does demonstrate the difficulty in designing attractive cycling facilities, being used by all the cyclists. The cyclists in Norway are aware of their freedom to choose their route "as they like", and they do take advantage of this flexibility. On the other hand does the example show that the majority of the cyclists are likely to choose the cycling lane when a cycling lane is available.

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FRIDAY, 16/4/1999

PROMOTION OF CYCLING AND ECONOMIC TRANSFORMATION - THE CASE OF GDANSK.

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PROMOTION OF CYCLING AND ECONOMIC TRANSFORMATION - THE CASE OF GDANSK.

The paper is about the promotion of cycling in the context of economic system transformation. Traditional structure of transport under the centrally planned regime is followed by the description of changes in economic policies concerning the passenger traffic. Approaches to the expansion of transport infrastructure are given, with quality cycling paths considered as a means of promoting social integration. Obstacles to the process of increased cycle utilisation in the Tri-city conurbation, the first success stories and overlooked possibilities for inexpensive expansion of the cycling infrastructure are presented followed by arguments for assignment of (limited) public resources to the development of cycle friendly urban infrastructure. Finally, potential coalitions and organisational forms adopted in the process are identified and assessed.

ENGLISH

FÖRDERUNG DES FAHRRADVERKEHRS UND WIRTSCHAFTLICHE TRANSFORMATION - DER FALL GDANSK

Dieses Referat beschäftigt sich mit der Förderung des Fahrradverkehrs im Rahmen der Transformation des Wirtschaftssystems. Eine Erläuterung der traditionellen Verkehrsstruktur unter dem zentral planenden Regime wird von einer Beschreibung jener wirtschaftspolitischen Veränderungen gefolgt, die Auswirkungen auf den Personenverkehr haben. Es werden Ansätze in bezug auf eine Erweiterung der Verkehrsinfrastruktur genannt, wobei Radwege guter Qualität als ein Mittel zur Förderung der sozialen Integration berücksichtigt werden. Über Hindernisse, die sich dem verstärkten Gebrauch des Fahrrads in dem drei Städte umfassenden Ballungszentrum entgegenstellen, wird ebenso berichtet wie über die ersten erzielten Erfolge. Darüber hinaus geben wir einen Überblick über Möglichkeiten zur kostengünstigen Erweiterung der Fahrradinfrastruktur und nennen Argumente zugunsten der Widmung (beschränkter) öffentlicher Ressourcen für die Entwicklung einer radfahrerfreundlichen städtischen Infrastruktur. Schließlich werden mögliche Koalitionen und im bisherigen Prozeßverlauf angewandte Organisationsformen genannt und bewertet.

DEUTSCH

PROMOCIJA KOLESARJENJA IN EKONOMSKA TRANSFORMACIJA - PRIMER MESTA GDANSK

Prispevek govori o promociji kolesarjenja v kontekstu transformacije ekonomskih odnosov. Tradicionalna struktura prometov pod centralistično zasnovanim režimom, ki ji sledi opis sprememb v ekonomski politiki v zvezi z potniškim prometom. Opisani so pristopi k širjenju prometne infrastrukture s kolesarskimi stezami, ki jih smatramo kot sredstvo promocije družbene integracije. Predstavljene so ovire v procesu naraščajoče koristnosti kolesarjenja v združenju mest Tri-city, prve zgodbe o uspehu in prezrte možnosti za poceni širitev kolesarske infrastrukture. Temu sledijo argumenti za dodelitev (omejenih) javnih denarnih sredstev, razvoju kolesu-prijazne urbane infrastrukture. Nazadnje bodo predstavljene potencialne koalicije in organizacijske oblike, ki so se razvile v procesu.

SLOVENSKO

PROMOTION OF CYCLING AND ECONOMIC TRANSFORMATION - THE CASE OF GDANSK

INTRODUCTION.

GENERAL CHARACTERISTICS OF THE GDANSK-SOPOT-GDYNIA CONURBATION.

Differences. The three cities (Trójmiasto in Polish) form one of the five largest conurbations in Poland. They have many things in common as far as their geomorphological characteristics are concerned, but have a clearly different character. Gdansk (currently 465 thousand inhabitants) is a city that celebrated in 1997 its millennium and is particularly known because of the architecture of its old town and the role it played in the European and world 20th century history. The city is the place where the first shots of the second war were fired but it is also the place where the Solidarnosc trade union movement of 1980 started the process of disintegration of communism. Sopot, (50 thousand inhabitants) has a character of a typical coast resort and has sometimes been referred to as the Monte Carlo of the North because of its former casino. Gdynia (260 thousand inhabitants), is one of the youngest large cities in Poland being the symbol of Poland's will to secure a meaningful access to the sea and the outer world. Its construction was inaugurated in 1924 only and within 10 years it became one of the most important ports of the Baltic and a major channel of Polish foreign trade. The three city conurbation is now inhabited by over 800 thousand inhabitants.

Similarities. All the three cities may be divided into two parts - one flat, located close to the Gulf of Gdansk (the Lower Terrace) and the other located on the moraine hills or an elevated flat area behind them (the Upper Terrace). Those who live and work on the Lower Terrace may enjoy the natural conditions for using bikes for daily commuting purposes like the inhabitants of Denmark, Holland or Northern Germany. If those who live in one of the large housing districts located at the Upper Terrace are to use bicycles for commuting purposes, innovative solutions allowing them to negotiate steep slopes that isolate them from the Lower Terrace have to be applied. The picturesque character of the forest-covered hills dividing the two terraces prompted the local authorities to consider them as the Tricity Landscape Park. Varied heights and many forest paths of the Park provide excellent conditions for recreational cycling but may inhibit the use of bikes for commuting purposes.

2. CHARACTERISTICS OF COMMUNICATION SYSTEMS UNDER CONDITIONS OF CENTRAL PLANNING.

The philosophy standing behind the actually implemented transport policies has hardly been articulated under the central planning regime, so that it is only possible to characterise it with its principal external symptoms. These are summarised as follows:

- Artificial postponement and/or discrimination of individual car ownership (slightly eased after the introduction of the „baby FIAT” licence in early 1970s).
- Heavy dependence on mass transportation systems (commuter trains, tramways, buses and trolley-buses) for commuting and medium range holiday travel.

The use of bicycles has never been considered as anything of importance to be included in any strategic infrastructural development projects. It was considered as the marginal way of transportation for the poorer rural and town dwellers that would most probably disappear when car ownership reaches international levels. Although leisure and sport cycling remained quite popular, commuter cycling was never considered a serious subject of analytical study. The development of cycling infrastructure could not be seriously contemplated because since mid 1970s there was a perennial shortage of bicycles. Even if the Romet factory of Bydgoszcz was a major European producer of bicycles, it was not possible to normally buy them in shops, since most of them were sold in export markets.

3. CHANGES IN PASSENGER TRANSPORTATION PATTERNS AFTER THE TRANSFORMATION

The transformation of the economic system in 1990 brought about the following important changes in the passenger traffic patterns:

- Dramatic increase in the number of passenger cars (see Annex)
- Radical decline in the railway passenger traffic.

These changes have had an indirect influence on the ideas for development of bicycle infrastructure. Growing traffic

necessitates separation of cyclists from congested roads, abandoned railway tracks provide excellent ground for the development of collision free recreational cycling.

Another result of the transformation was a tremendous increase in the number of bicycles sold. This resulted in an unusual pattern of bicycle ownership in Poland. The increase in bicycle sales coincided with the appearance of MTB and ATB bikes in the world markets. Thus the bicycles imported to Poland and sold in great numbers to the bicycle hungry generation of young people were usually of the advanced, MTB or ATB category.

The dramatic increase in the number of cars was hardly reflected in the improvement of road infrastructure. This had at least three important effects, previously hardly experienced in Poland:

- an acute shortage of parking space.
- appearance of traffic jams during the morning and afternoon rush hours.

As far as holiday traffic is concerned heavy traffic jams started to occur nearly every weekend so the authorities had to impose the ban on lorry traffic during principal annual holidays. Plans of building motorways were developed but few of them were actually implemented because of financial and organisational constraints.

The reduction of subsidies to railways resulted in an increase in the price of railway tickets in comparison with costs of travelling by car accompanied by the deterioration in the quality of service on many regional lines. It resulted in a decline in demand for railway services on local connections. The latter effect was also due to the reduction of employment in traditional industrial occupations.

These developments resulted in the change of pattern of railway services. Local commuter trains were less frequent, further decreasing their attractiveness. Many local railway connections were suspended and then closed down. A resulting increase in motor traffic produced more traffic jams during rush hours.

4. APPEARANCE OF BICYCLE PROMOTION INITIATIVES

Growing problems of urban commuters sparked the need to think about ways of improving the situation. Freedom of expression provided ground for the organisation of various cycling promotion initiatives. As far as cycling promotion campaigns were concerned, the ecological movement played a major role. On the other hand the newly formed Gdańsk city government wanted to express its ability to recognise the needs of the inhabitants. Thus the first low-cost bicycle lane was inaugurated after marking it on a pavement with white paint.

Growing traffic and congestion meant more pollution of the atmosphere. This prompted the ecological organisations and other cycling fans to organise mass bicycle rallies that rode along the main street of the Tricity on a late Sunday morning, usually at the beginning of the summer season. Their intention was to persuade the city authorities to devote more attention and resources for the construction of cycling paths. Roads were temporarily blocked so that frustrated car drivers were often angry with those demonstrations. Eager ecologists applied slogans that had not only a pro-bike character - they were also trying to develop anti-car attitudes. In Gdansk the campaign entitled „Gdansk - the bike friendly city” was interpreted by some zealots as the „Gdansk - the city not for cars” campaign. The latter message was highly dramatised when the promoter of the campaign rode over his old car on a bike pressing it into a piece of scrap metal.

For many it seemed illogical to promote anti-car attitudes when after many years of communism one could finally afford a car. Negative attitude towards cars might be perceived by some as a legacy of communist thinking. In view of poor conditions of road infrastructure it was difficult to find general support for the construction of special cycling tracks. Why should we spend funds for cycling tracks when the needs of road improvement are so acute?

The ecologists did not give up. The idea of mass cycling rally from Gdynia to Gdansk had to be abandoned because of growing resistance from the automobile lobbyists. In June 1998, however, the president of Gdansk joined the group of nearly a thousand cyclists riding along the main thoroughfare of Gdansk to the Old Market Square. Then he could only but agree to the formation of a voluntary consultative body intended to prepare a new strategy of cycling development in the city of Gdansk. This body consisting of the cycling practitioners, ecologists, architects, urban development specialists, road builders, economists and journalists was supplemented by representatives of members of competent departments of the city administration.

5. CONSTRUCTION OF CYCLING PATHS IN THE TRICITY AREA.

Preparation of a new plan of cycling paths.

In 1992 a specialist Communal Construction Design Office prepared a general plan for the construction of cycling paths. It was preceded by an opinion poll intended to analyse the inhabitants' attitudes towards the idea of spending public funds on the construction of cycling infrastructure. One of the questions asked was about the main obstacles to the development of cycle traffic. The highest number of respondents indicated the option suggesting the shortage of bicycles in shops. Another assumption adopted was the impossibility to use bicycle for commuting purposes in autumn and winter.

The construction of the cycling track along the main Tricity thoroughfare was excluded on the assumption that cyclists would not use it in view of the presence of exhaust gases from heavy traffic. The plan assumed as well that bicycles would be used for shopping and did not identify secondary and high schools as the most important commuter cycling traffic destinations. No special attention was devoted to the need of finding ways of overcoming the difficulty resulting from the need to negotiate steep slopes isolating the lower terrace from the upper terrace areas. The authors of the plan did not try to develop criteria that would allow to decide the sequence of construction of particular elements of the cycling track network. No attention was paid to the necessity of building parking facilities for cyclists. Cycling was implicitly considered as the activity of a small number of amateurs and not as a means that could alleviate the growing congestion and pollution problem. Promotion of cycling was definitely not considered as means of solving the growing paralysis of the Tricity transport system.

5.2 Actual construction of cycling paths. Purposeful and spontaneous improvement of cycling infrastructure.

In view of the limited resources available, the first separate cycling tracks were practically not built but marked on the existing asphalt sidewalks along the principal axes of the Gdansk Lower Terrace. The only ground work done along this pioneer cycling path consisted in the lowering of the kerbstones to make the ride across the perpendicular streets smoother for an average cyclist.

In Gdynia a similar move was made along the coastal promenade built in early seventies. No major investments were made but the cycling path was marked on the existing asphalt surface.

The next step was the construction of a coastal promenade in Gdansk with its extension in Sopot. This time it was a construction of a quality cycle route immediately bordering a walking promenade. It was the first such purposefully built cycling track since the 2nd world war. It has soon proved to be a very popular track for both cyclists and pedestrians. Good paving material was used and gave it a very attractive look. Its location, however, close to the beach dunes did not contribute to the increase in the number of cycling commuters. Even though it is quite wide and both parts of the promenade are properly marked, at the beginning the media were full of reports about:

- pedestrians complaining of cyclists disturbing their peace of mind cycling at high speeds
- cyclists complaining of pedestrians walking on the cycling part of the promenade.

The same situation appeared to prevail on the pavements built earlier divided from the cycling track with white paint only.

In 1998 the coastal cycling and walking promenade were linked with the cycle axis of the Lower Terrace with another quality cycle track located along one of the perpendicular streets.

In the meantime some investments were made on the flat part of the Upper Terrace. They were either carried out together with the construction of a major highway joining the Lower Terrace with the outer motorway, or they consisted in cosmetic changes of the layout of pavements in some of the new housing districts. Critics say, however, that some of those cycling paths lead from nowhere to nowhere and are not an important contribution improving the cycling infrastructure in the Tricity conurbation.

The cycling lobby has, however received support from a totally new source. After the transformation of economic system more attention was given to the underprivileged - the handicapped moving on wheelchairs. To make their life easier new low floored buses and trams were bought. Another improvement was the idea to lower kerbstones at road crossings wherever new traffic lights were installed. Growing number of cars meant often the reduction in the number of pedestrians so that pavements were less often used than before. The police have been given a tacit hint not to fine cyclists riding on pavements. Thus the risk averse cyclists often have only one problem to cope with - they have to brake frequently while crossing road junctions because of high kerbstones even if there is neither a pedestrian nor a car at

sight. Now, since the Gdansk city centre is virtually free of kerbstones at major crossings, the average cyclist can move there at relative ease.

It seems then that there is a chance for relatively non-expensive but substantial improvement of cycling conditions in the rest of the city if the „lowering the kerbstones” campaign is consistently followed elsewhere.

This method of development of cycling infrastructure will have to be complemented with the following investments:

- construction of high quality bicycle parking facilities at railway stations and other important cycling destinations
- construction of tracks that would provide junction between the Lower Terrace and Upper Terrace areas.

This can be achieved if low inclination routes from the Lower Terrace to the Upper Terrace of the Tricity are built or found. The authors of the present paper are involved in formation of a coalition for the transformation of an abandoned railway track joining the two terraces of the city of Gdansk into a quality cycling track. If accomplished, this project would assure a continuous, safe way for cyclists of all ages and skills leading from the housing districts of the Lower Terrace to the Rebiechowo airport located at the Upper Terrace, so that the extremely congested thoroughfare is avoided.

5.3 Ideas developed by the City Advisory Team for Cycling Promotion

The team, meeting the high ranking city administration decision-makers at regular monthly intervals has developed the following ideas:

- (1) The attitudes of the city inhabitants towards cycling have to be studied with a professionally prepared questionnaire
- (2) There is a need to prepare a new comprehensive plan of development of cycling infrastructure in the city of Gdansk. This plan should i.a. prioritise the construction of cycling tracks according to criteria agreed upon with the members of the Team.
- (3) The first cycling track should be built along the main thoroughfare linking Gdansk with Sopot and Gdynia since it is the most frequently used transportation axis of the Tricity area. It should be complemented with an extension linking it with the exit route towards Warsaw.

5. CONCLUSIONS

The transformation of the economic system has thoroughly changed the patterns of passenger traffic in the Gdansk-Sopot- Gdynia conurbation. The needs of the ambitious recreational cyclists seem to be quite well taken care of thanks to a substantial improvement of availability of quality cycles, completion of the coastal cycling track and the existence of many cycling paths in the Tricity Landscape Park. Using bicycle for commuting purposes, however, can only be accomplished when a proper infrastructure is built. This should encompass the following elements:

- adequate bicycle parking facilities
- separate, specially built cycling tracks along routes with the heaviest traffic,
- lowered kerbstones at all cross-roads controlled with traffic lights
- traffic calming measures on selected side streets.

The construction of the above bicycle infrastructure facilities should be accompanied by a suitable informational campaign. It should promote peaceful coexistence of cyclists, pedestrians and handicapped wheelchair users of the pavements converted partly into cycle tracks. This strategy can meaningfully contribute to the improvement of the quality of urban life without straining the city budget in the early phase of economic system transformation.

The implementation of these ideas will then have to be followed with some conscious measures aimed at the limitation of use of cars in some areas within the framework of comprehensive sustainable transport policies.

If we agree that the cycle friendly city is the human friendly city, one can expect a substantial inflow of resourceful immigrants and investment, helping to further development of our conurbation.

Annex 1

Basic trends in relative importance of particular modes of passenger transport in Poland and the Gdansk region in 1990s

1. Registered passenger cars in Poland increased between 1990 and 1996 by 53% (in absolute terms their number grew from 5,261 thousand to 6,771 thousand)
2. Between 1993 and 1996 the number of household equipped with bikes (excluding children bikes) grew from 52,7% to 73,8% i.e. by 40%
3. In 1996 the number of household equipped with cars amounted to 37,6% it means that the number of households equipped with bikes was higher by 36.2%.
4. The total length of public roads paved with hard surface in the Gdańsk region between 190 and 1995 grew by 11.5% but between 1997 and 1995 declined by 4%.
5. Decline in the length of railway lines under exploitation amounted to 11%, Passenger railway traffic in million passenger kilometres decreased by 50%
6. Annual sales of bicycles between 1993 and 1995 increased by 86% while in the same period the number of cars sold decreased by 4%.

DEVELOPMENT STRATEGY OF CYCLING TRANSPORT IN OLOMOUC

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DEVELOPMENT STRATEGY OF CYCLING TRANSPORT IN OLOMOUC

First discussions on cycling transport arose in 1990 after social changes in the country. Efforts of cycling activists to solve radically conditions of cycling transport were stopped by the vague city conception, lack of means and need of solutions for the whole traffic system. First constructive dialogues came through establishment of the Transport Commission as a consultant of the City Council - the development strategy of cycling transport was created and approved. Two main targets of the strategy were : to encourage public to use bicycles and create good conditions for construction of cycle paths. The strategy already brought impact in cycling transport (documentation of cycle routes elaborated, schedule of activities, incorporation of cycling transport in the city planning scheme, partial financing from the city budget, implementation of first sections of cycle routes), but also in cycle tourism (study of cycle routes in the Olomouc region and edition of its cycle tourist map, participation in coordination of Moravian - Silesian long - distance cycle routes). The project of "Moravian - Silesian long-distance cycle routes could change the quality of cycling transport, it means that bicycles will be more frequent and construction of cycle paths in cities and their surroundings can be solved in the frame of this project. The city of Olomouc makes an appeal to other Moravian cities for joining the project. The City Council keeps on collaborating in the project with the Transport Research Center and with the Regional Development Agency for Central Moravia.

ENTWICKLUNGSSTRATEGIE FÜR DEN FAHRRADVERKEHR VON OLMÜTZ

Die ersten Diskussionen über den Fahrradverkehr entstanden 1990 nach den gesellschaftlichen Umbrüchen im Land. Den Anstrengungen der Fahrradaktivisten, die Probleme des Fahrradverkehrs radikal zu lösen, standen die vagen Vorstellungen der Stadt, ein Mangel an Mitteln und die Notwendigkeit von Lösungen für das gesamte Verkehrssystem entgegen. Erste konstruktive Dialoge entwickelten sich durch die Einrichtung der Verkehrskommission als beratendem Organ des Stadtrats. Eine Entwicklungsstrategie für den Fahrradverkehr wurde entwickelt und verabschiedet. Die beiden Hauptzielsetzungen der Strategie bestanden darin, den Gebrauch des Fahrrads zu fördern und gute Bedingungen für die Einrichtung von Radwegen zu schaffen. Die Strategie hat bereits Auswirkungen auf den Fahrradverkehr (z.B. Dokumentation über Radrouten, Katalog verschiedener Aktivitäten, Integrierung des Fahrradverkehrs in die Stadtplanung, teilweise Finanzierung aus dem Stadtbudget, Realisierung erster Abschnitte der Fahrradrouten) aber auch auf den Fahrradtourismus (Analyse der Radrouten in der Region Olmütz und Herausgabe einer Karte für

Fahrradtouristen, Teilnahme an der Koordination des mährisch-schlesischen Radwanderwegs). Das Projekt „Mährisch-Schlesischer Radwanderweg“ könnte die Qualität des Fahrradverkehrs ändern und bedeutet, daß Fahrräder häufiger benutzt werden und der Bau von Radwegen in Städten und deren Umgebung im Rahmen dieses Projekts realisiert werden kann. Die Stadt Olmütz ruft die anderen Städte Mährens dazu auf, sich diesem Projekt anzuschließen. Der Stadtrat arbeitet weiterhin mit dem Verkehrsforschungszentrum und der Regionalentwicklungsagentur für Mittelmähren im Rahmen dieses Projekts zusammen.

RAZVOJNA STRATEGIJA KOLESARSKEGA PROMETA V OLOMOUCU

Po socialnih spremembah v državi je leta 1990 prišlo do prvih diskusij o kolesarskem prometu. Nejasna predstava, pomanjkanje sredstev in potrebe po rešitvah za celoten prometni sistem so ustavili napore kolesarskih aktivistov, ki so poskušali radikalno spremeniti stanje kolesarskega prometa. Z ustanovitvijo Prometne komisije, ki je delovala kot svetovalec Mestnega sveta, je prišlo do prvih tvornih dialogov- izdelana in odobrena je bila razvojna strategija kolesarskega prometa. Dva glavna cilja strategije sta bila: spodbujati javnost k uporabi koles in ustvariti dobre pogoje za gradnjo kolesarskih stez. Strategija je že prinesla uspehe za kolesarski promet (izdelana je dokumantacija za kolesarske poti, program aktivnosti, vključitev kolesarskega prometa v načrt mestnega razvoja, delno financiranje iz mestnega proračuna, izgradnja prvih odsekov kolesarskih poti) in tudi v kolesarskem turizmu (proučevanje kolesarskih poti v regiji Olomouc in izdaja turističnega kolesarskega zemljevida, sodelovanje v usklajevanju Moravsko- silezijskih dolgo progaških kolesarskih poti). Projekt "Moravsko-silezijskih dolgo progaških kolesarskih poti" bi lahko spremenil kvaliteto kolesarskega prometa, saj bi to pomenilo, da bi bila uporaba koles pogostostejša in gradnja kolesarskih stez v mestih in njihovi okolici bi v okviru tega projekta lahko bila rešena. Mesto Olomouc poziva ostala moravska mesta, da se pridružijo temu projektu. Mestni svet v projektu še naprej sodeluje z Prometnim raziskovalnim centrom ter z Regionalno razvojno agencijo za osrednjo Moravsko.

DEVELOPMENT STRATEGY OF CYCLING TRANSPORT IN CITY OF OLOMOUC

INTRODUCTION

Cycling transport became a frequented subject of many talks after social modifications since 1990. At that time a part of public and several cycling activists struggling for radical solutions of cycling transport's conditions met obstacles such as - unclear municipal conception, lack of resources and necessity to evaluate generally possibilities of solving the whole transport system. The systematic attitude was not created until the number of transport specialists increased when it was possible to specialise one expert merely for cycling transport. Cycling was also more discussed thanks to establishment of the Transport Commission as an advisory body of the City Council. There arose large polemics among members of this Commission. Discussions with public stimulated the City Council to create and finally also approve the development strategy of cycling transport. The strategy was based on involvement of large public and had two basic objectives :

- motivate and encourage people to use bicycle as an alternative environment-friendly kind of transport means (saving of time - speed, promptness; low costs; positive influence on health; cheerful fitness...)
- create suitable conditions for construction of cycle paths in the city

THE STRATEGY IS FOCUSED ON DEVELOPMENT OF TWO AREAS:

- A. cycling transport
- B. cycle tourism

A. CYCLING TRANSPORT

A.1. Elaboration of the technical study for cycling transport in Olomouc

The whole cycle network was subsequently settled in the unified system in accord with urban planning and transport control. For elaboration of the study „Technical Documentation of Cycle Routes in Olomouc“ many experiences from other domains were incorporated, such as an intensity research of cycling transport, evaluation of cycling accident rate

and from cycle tourist planning scheme in surroundings of Olomouc.

A.1.1. Relations between areas

From the point of view of terrain character, it means flat land, number of inhabitants etc. Olomouc area is a good source for cycling. It is not necessary to study altitude levels there, the only high point in near surroundings of Olomouc is Sv. Kopecek (St. Hill).

The main source for designing of the basic cycle network was the draft of cycle routes : the source (residential zones) - objective (industrial areas, services, facilities, recreational zones and sport facilities).

The structure of city can be simply described in this way: east - residential zone, centre - surrounded by ring of parks, east - industrial zone, north - recreational and residential zone, south - residential zone. Relations were solved in these areas:

- Function specification of areas
- Source and objective map of cycling transport
- Relations between residential and industrial zones
- Relations between residential and recreational zones

A.1.2. Intensity research of cycling transport

The data collected through researches are not directive for the technical documentation because it is supposed that cyclists will look for new routes in the frame of progressive establishment of cycle routes and in accord with the technical documentation. The research certifies relations between areas and is taken into account in the proposal of construction time schedule of cycle ways. The following researches were effectuated :

- Intensity of cyclists on profiles in both of directions per 24 hours - 1992 (max - 2809 cyclists, Masarykova street)
- Intensity of cyclists during afternoon traffic peak 14:00 - 16:00 p.m.- 1994 (max. the bridge Bristol - 824 cyclists)
- Modal split in Olomouc -1993 (8,8% rate of cycling transport)

A.1.3. Evaluation of cyclist accidents

Together with the process of growing intensity of cycling transport, also cyclist accidents are counted. Regarding the fact that accident statistics are provided by the Czech Police, there are mentioned just accidents which caused an injury or large property damages. Statistics omit great quantity of falls, accidents which occur at playgrounds, courtyards and private ways. Significance of such an evaluation of cyclist accident rate consists especially in determination of conflict localities. Cyclist accident rate was evaluated in 1990 -1994 and it includes three parts:

- Determination of localities where cyclist accidents are frequent
- Division of traffic cyclist accidents according to offenders of the accident, according to consequences and according to years

Further specification : survey of cycling accidents
consequences of accidents at cyclists
category of offenders of traffic accidents according to age

- Division of traffic cyclist accidents according to offenders of the accident, according to consequences and according to cause of an accident

Further specification : causes of traffic accidents with cyclists
lay of traffic accidents during a year
lay of traffic accidents during a day
lay of traffic accidents according to partaker

A.1.4. Proposal of cycle routes in surroundings of the city

To keep conception character of the proposed solution of cycling transport in Olomouc there was a necessity to review all the surroundings. In 1994 the documentation of basic cycle network for the Olomouc district was elaborated, on this basis the cycle tourist map of Olomouc area was published. The proposal of cycle routes in Olomouc was included into the Technical Documentation of Central Moravian cycle routes in 1997. The conception of cycling transport in Olomouc takes also the project of „Moravian - Silesian long-distance cycle routes” into account, it means to ensure to cyclists safety, fluent and attractive way through the city.

Pursuant to the mentioned data, there was designed the cycle network in Olomouc providing main linkages of

cycling transport with particular areas. The network is designed as a „grid“ basic system created by nine cycle routes in the west - east direction (routes I. - IX.) and by eight cycle routes in the north - south direction (routes A. - H). The principle of leading cycle routes consists in going on roads with low intensity of traffic and the proposal of safety measures in benefit of cycling transport at conflict localities. Implementation of particular measures will enable safety and comfortable way through all the areas. The Technical Documentation counts with construction of 33,0 km of cycle ways at the territory of Olomouc city.

A.2. Creation of time schedule for subsequent implementation of cycle paths

In the frame of the Technical Documentation, preliminary implementation costs of the whole network were estimated about 2,5 mil. ECU. The City Council of Olomouc regularly receives the list of priorities for construction of cycle ways with view of three years. Since 1994 there were agreed regular yearly contributions of the City Council in benefit of cycling transport.

While drawing the time schedule of particular measures, the following principles are used:

- the paths are carried out progressively from the city centre to exterior
- if possible, they are implemented in the frame of one cycle route
- the priority is given to cycle routes having significance for commuters and recreation

A.3. Insertion of cycling transport into the Territorial Planning Scheme of the city

At the end of 1998, the Territorial Planning Scheme of Olomouc was approved - including the above mentioned Technical Documentation. Importance of cycling transport is characterised in the following way there : „Transport is an integral part of the city life and concerns interests of all citizens, it creates a live type of municipal organism, but it brings remarkable negative impact as well. The philosophy of transport solutions must be based upon the principle of sustainable development which is indispensable considering the dynamic growth of motorised traffic during last years. The objective of municipal transport planning cannot already be adaptation of the city to growing car traffic, but it has to include also systematic support of environment-friendly kinds of transport (public transport, pedestrians and cycling transport) with tendency to decelerate the expected growing of motorised transport and to sustain transport in volumes which are acceptable for the city.“ Quotation from the Territorial Planning Scheme of the Olomouc City.

A.4. Implementation of first partial stages of cycle routes and further time schedule

Since 1994, there was effectuated 8,0 km of cycle ways in total at the city territory. Since 1999 the city of Olomouc together with surrounding villages launched a large program of construction of cycle routes, which is focused on cycle connections of the city with surrounding villages. It deals with construction of 26,0 km of cycle ways in the period 2000 - 2006. The program will be supported by EU - 50% will be given in the frame of structural funds.

B. CYCLE TOURISM

One of possibilities how to create good conditions for construction of cycle paths in the city and motivate to use bicycles - is also cycle tourism. Since 1994, after the visit of specialists from the partner city from Netherlands - Veenendaal - the city of Olomouc started to be more interested in this topic. At first the study of cycle routes in Olomouc area was elaborated and the cycle tourist map was published. In 1995 the city started to develop the project Moravian Path which later became the base of the project Moravian - Silesian long-distance cycle routes which is also presented at the conference. The Moravian Path was opened by a festive bike tour on the 9.6. 1998, its length is 330 km and goes along the Morava river from Polish border through Olomouc to Austrian borders. Moravian Path is a challenge for the city of Olomouc to enable safety way through the city. The same is valid also in the case of the second backbone long-distance cycle route - so-called Amber Path (local long-distance route, not the EuroVelo Amber Route) leading from Ostrava through Olomouc to Brno and further onto Vienna. The interest in solving the cycling transport grew also thanks to the EuroVelo project because the city Olomouc is situated at the intersection of two European cycle routes: EuroVelo n.6 and EuroVelo n.9. The EuroVelo project is presented at this conference too. Beside building of cycle ways the city supports also signposting of regional and local cycle routes in surroundings of the city and marketing publication, including cycle tourist maps.

CONCLUSION

All these activities are associated especially with the fact that in spite of doubtless positive points in solving the cycling transport in Olomouc, it was possible to observe some kind of stagnation after destructive floods in summer 1997 when the support of cycling transport logically decreased. Further on it is necessary to keep in mind also other problems which can be solved just by continual activity in all the areas, the intermittent construction of „some cycle path“ will never be sufficient for development of this kind of transport:

- the cycling transport is still considered more a form of spending leisure time
- small part of cycling transport in the total modal split (the modal split ranges around 10 % max.)
- the city did not still succeed to build up the unified cycle network, just partial sections are constructed (it is necessary to achieve at least the whole routes as quickly as possible in order the significance of some constructions could be proved)

Therefore it was essential to look for new directions which could help to develop the cycling transport. One of potential directions is also the goal-directed support of the project Moravian - Silesian long-distance cycle routes. The project can bring positives for travel tourism, improving of support quality of cycling transport, it means growing popularity of bicycles and construction of cycle paths in towns and their surroundings in the frame of this project. Right through this project the program of building cycle paths in towns and their surroundings was prepared. The city of Olomouc calls also other Moravian towns to join the project - it means to help covering signposting and promotion costs and to be

STUDIES AND PROJECTS OF CYCLE TRANSPORTATION IN LJUBLJANA

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STUDIES AND PROJECTS OF CYCLE TRANSPORTATION IN LJUBLJANA

Slovene government, like many other governments in Europe, recognised that transportation policy should include cycle transportation in future at all levels of planning process, from state and city level to smaller country areas or city surroundings.

This paper deals with improvements about all kinds of cycle transportation in Slovenia and especially in Ljubljana as the capital of Slovenia. There are several experiments, studies and projects about this transportation policy, building entirely new network, a new system for cycle transportation, for everyday use, recreation and sports. The most important projects are going to be presented at the conference, as well as already realized improvements on existent transportation systems and network.

STUDIEN UND PROJEKTE ZUM FAHRRADVERKEHR IN LJUBLJANA

Die slowenische Regierung hat, wie viele andere europäische Regierungen, erkannt, daß ihre Verkehrspolitik auf allen Planungsebenen von der nationalen und städtischen Ebene bis hin zur Planung in kleineren Landkreisen oder im städtischen Umland künftig auch den Fahrradverkehr einschließen sollte.

Dieses Referat beschäftigt sich mit Verbesserungen jeder Art für den Fahrradverkehr in Slowenien und insbesondere in der slowenischen Hauptstadt Ljubljana. Es gibt zu dieser Verkehrspolitik verschiedene Versuche, Studien und Projekte. Es geht um die Schaffung eines ganz neuen Netzes, eines neuen Systems für den Fahrradverkehr, für den Alltagsgebrauch wie auch für das Radfahren in der Freizeit und zu sportlichen Zwecken. Anlässlich der Konferenz werden die wichtigsten Projekte wie auch bereits erzielte Verbesserungen bestehender Verkehrssysteme und -netze vorgestellt.

DEUTSCH

ŠTUDIJE IN PROJEKTI KOLESARKEGA OMREŽJA V LJUBLJANI

Slovenska vlada je spoznala, kot tudi mnoge druge vlade v Evropi, da mora prometno načrtovanje vsebovati tudi kolesarske poti, za prihodnost celovitosti prometnega omrežja. To načrtovanje mora biti prisotno na vseh nivojih odločanja; od državnega in mestnega nivoja, do mestnih okolic in manjših podeželskih področij.

Ta referat obravnava izboljšave vseh možnih načinov posodobitve kolesarskega omrežja in prometa v Sloveniji in še posebej v glavnem mestu Ljubljani. Predstavljeni so številni poskusi, študije in projekti o tej prometni politiki, ki skuša zasnovati povsem novo omrežje, sistem kolesarskega prometa, za vsakdanjo uporabo, za šport in rekreacijo. Na konferenci bomo predstavili najbolj pomembne projekte, že realizirane izboljšave na obstoječem transportnem omrežju, kot tudi povsem novo zasnovano omrežje kolesarskih poti v Ljubljani.

SLOVENSKO

METHODS OF MONITORING CYCLE USE

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METHODS OF MONITORING CYCLE USE

The UK's National Cycling Strategy, launched in 1996, included a headline target of doubling cycling by 2002, and doubling it again by 2012. To assist highway authorities to monitor progress towards meeting these important targets, the Department of the Environment, Transport and the Regions commissioned the Transport Research Laboratory to conduct research into this field.

The end product of this research culminated in a Methodology Report and a Traffic Advisory Leaflet. This paper will highlight the background to these documents, and then go on to describe how some local highway authorities are applying the guidance given therein to monitor cycle use levels and patterns in their areas. The author will also describe specific monitoring techniques, such as screenline counting and automatic counting systems.

ENGLISH

METHODEN ZUR BEOBACHTUNG DES FAHRRADGEBRAUCHS

Die 1996 lancierte National Cycling Strategy umfaßte als Zielsetzung eine Verdoppelung des Fahrradverkehrs bis 2002 und eine nochmalige Verdoppelung bis 2012. Um den Straßenverkehrsbehörden die Beobachtung des Fortschritts in Richtung dieser wichtigen Zielsetzungen zu erleichtern, hat das Ministerium für Umwelt, Verkehrswesen und die Regionen das Transport Research Laboratory damit beauftragt, in diesem Bereich Untersuchungen durchzuführen.

Das Endprodukt dieser Forschungstätigkeit fand seinen Ausdruck in einem Methodologie-Bericht und einer Verkehrsratgeber-Broschüre. Dieses Referat gibt Auskunft über den Hintergrund dieser Dokumente und beschreibt in der Folge, wie einige lokale Verkehrsbehörden die darin enthaltenen Richtlinien anwenden, um das Ausmaß sowie die Muster des Fahrradgebrauchs in ihrem jeweiligen Zuständigkeitsbereich zu beobachten. Der Autor wird darüber hinaus spezifische Beobachtungsmethoden wie beispielsweise Screenline-Zählungen und automatische Zählssysteme beschreiben.

METODE NADZOROVANJA UPORABE KOLES

Nacionalna kolesarska strategija Velike Britanije iz leta 1996, vsebuje kot glavni cilj podvojitve kolesarjenja do leta 2002, in njegovo ponovno podvojitve do 2012. Za pomoč pri nadzoru napredka v približevanju tem pomembnim ciljem je Oddelek za okolje, promet in regije pooblastil Laboratorij za raziskave transporta, da na tem področju opravi raziskavo.

Končni rezultat te raziskave je dosegel višek z Metodološkim poročilom in Prometnim svetovalnim prospektom. Prispevek povdarja ozadje teh dokumentov in nadaljuje z opisovanjem kako se nekatere lokalne prometne oblasti prilagajajo smernicam, ki so nakazane v teh dokumentih, za nadzor stopnje uporabe koles in vzorce na njihovem območju. Autor bo opisal tudi specifične nadzorne tehnike, kot so »screenline« štetje in sistemi avtomatičnega štetja.

METHODS OF MONITORING CYCLE USE**INTRODUCTION**

Cycling currently accounts for 2% of all trips in the UK. The National Cycling Strategy (NCS), launched in 1996 and supported by the UK government, included a headline national target of doubling cycle use by 2002, and doubling it again by 2012. An integral part of this aim is the intention that highway authorities should set their own local cycle use targets. However, before this can be done, highway authorities must first accurately assess the current level of cycling in their areas. This will enable sensible targets to be set before embarking on a meaningful cycle use monitoring programme.

In order to provide local highway authorities with appropriate guidance, the Department of the Environment, Transport and the Regions (DETR) commissioned the Transport Research Laboratory (TRL) to conduct research into monitoring cycle use. This work culminated in two reports (Research on monitoring cycle use and Guidance on monitoring local cycle use) and a Traffic Advisory Leaflet.

Unlike the established methodology for counting motor vehicles, monitoring cycle use is still in its early stages. The main problem is the lack of reliable automatic traffic counting (ATC) equipment designed specifically to count cyclists. However, methodology for carrying out passive surveys of cycle use levels (eg cycle parking surveys, road-side interviews, etc) is well established and documented.

RESEARCH OBJECTIVES

The main overall aim of this project was to develop a suitable methodology which can be applied locally to monitor cycle use. To do this TRL had to consider the following: local authority requirements for data on cycle use; data collection already undertaken by local authorities; data available at the local level from national sources; the practicalities, costs and accuracy of various data collection techniques; the frequency with which each element of data collection in the methodology proposed would need to be completed. This paper will deal mainly with the last two.

METHODOLOGY

The first practical stage of the research involved sending out a questionnaire to 54 local authorities in the UK, primarily in an attempt to discover the extent to which cycling was monitored in their areas - 56% responded. The main results were that 41% said that they had introduced cycle use targets. Forty-five percent said that they intended to do so. Regular cycle counts were carried out by sixty-three percent. However, few authorities carried out regular and statistically valid surveys that would enable accurate monitoring of levels of cycle use, or assessment of progress towards targets.

The questionnaire also asked local authorities to estimate cycle use levels in their areas. On the basis of this information, 6 local authorities, each with varying levels of cycling activity, were selected to assist with cycle use monitoring trials. One of the main objectives of these trials was to select a suitable automatic traffic counter (ATC) capable of recording bicycles in mixed traffic conditions.

AUTOMATIC TRAFFIC COUNTERS

The following types of ATCs were considered:

- Tube counters measure traffic flows by detecting vehicles as their wheels depress flexible tubes fixed to the surface of the carriageway. Despite being inexpensive, tube counters were rejected because of their vulnerability to damage from heavy goods vehicles (HGV) and vandalism. Furthermore, tube counters require frequent checking and calibration to remain accurate.
- Piezoelectric counters work through the principle of the strain gauge, in that the pressure exerted by a wheel is converted into an electrical signal and recorded by a central control unit. The main disadvantage of this is the initial cost (approximately £5,000 (€7,150) per site) and their inability to cope with damage from HGVs and vandalism.
- Inductive loop counters consist of a coiled wire buried in the road generating a small localised magnetic field (see Figure 1). The metal in vehicles passing within this field is detected and recorded by the counter unit. The configuration of the loop and the calibration of the counter unit can be adjusted so that bicycles are individually recognised. Inductive loops were chosen for the trials because they are relatively inexpensive (approximately £1100 (€1,570) per site), require little maintenance, and are up to 95% accurate when installed correctly.

Given the above, inductive loop counters were chosen and installed at 18 sites in the 6 local authority areas. The next step was to validate initial ATC data with manual classified counts (MCC) (see Table 1).

Table 1:
Sample
of

Area	Type	Count Period (hrs)	Counter	ATC	MCC	Diff (%)
HACKNEY ¹	Road	12	Cycles	375	436	-14.0
HYNDBURN	Cyclepath	12	Cycles	35	54	-35.2
NORWICH	Cycle Lane	6	Cycles	153	189	-19.0
			Vehs ²	2315	3630	-36.2
GUILDFORD	Road	12	Cycles	58	114	-49.1
			Vehs	8093	8155	-0.8
TAUNTON	Cycle Track	12	Cycles (n)	273	313	-12.8
			Cycles (s)	277	353	-21.5
Notes: 1 & 2 . ATC's did not cover all carriageway so vehicle validation not applicable						

validation counts at local authority study sites

Generally, this revealed a general tendency for the ATC data to under count the total number of cycles in mixed traffic conditions. However, ATCs installed at off-road sites, such as cycle tracks, generally performed better than those used on all-purpose roads. The main reason for this is the tendency of other vehicles to mask cycles from time to time, thereby preventing them being counted. The main problem at off-road sites was caused by some cyclists arriving simultaneously at the ATC by travelling two or more abreast, resulting in only one being counted.

Common to some on and off road sites is the tendency of some cyclists to bypass ATC loops completely, eg by travelling on the footway of an all purpose road, or by using the pedestrian part of a shared use cycle track. Furthermore, in the absence of a mains power supply, battery life can be limited to as little as two weeks. However, during the course of, and as a direct result of, these trials, the counter manufacturer did modify the system to extend battery life.

508 The following

factors, learned as a result of conducting these trials, should be borne in mind when selecting suitable sites for inductive loop counter installation:

- Temporary "stick down" counters may be used to test the suitability of a site before installing a permanent counter.
- The sites should contribute to the monitoring programme and not be selected on the basis of convenience alone.
- The site layout and traffic characteristics should suit the monitoring equipment chosen.
- Sites with high cycle flows should be chosen. This will minimise the variability of the data over a given period of time. Further guidance on variability factors is given below.
- Since most cycling occurs on all purpose roads, it is important that mixed traffic sites are included in the monitoring programme. However, it should be recognised that the accuracy of ATC data from these locations will require frequent validation and adjustment.
- To complement mixed traffic flow sites, locations where bicycles are segregated from motor vehicles should also be selected as the data from these sites will prove more reliable and require less validation, eg cycle tracks, lanes, gaps, etc.
- As far as possible sites where it is difficult for cyclists to bypass the counter should be chosen.
- Some ATCs are not capable of counting cyclists travelling at (say) less than 5mph. Therefore, sites at uphill gradients, bends or junctions should be avoided.
- Inductive loops should not be positioned close to potential sources of electrical interference. Metal bridges, buried cables, rail lines, etc can adversely affect the data from an inductive loop, although suppressors can be fitted to minimise the problem.

WHEN TO COUNT

Unless high intermittent peak flows are envisaged (eg at schools, factories, etc), daily flows should be recorded. Hourly flows should also be recorded, since this would be compatible with other traffic data. Periods shorter than this may be useful for junction or signal design purposes. For manual counts it should be borne in mind, that as a general rule of thumb, the results from a series of short peak period counts will be more statistically robust than a 12 hr count on a single day. This is because often, cycle traffic is more peaked than motor vehicle traffic.

HOW MANY DAYS TO COUNT

Short term counts may be used to estimate long term traffic flows. The accuracy of this estimate is dependent upon the accuracy of the counting method; the length of the count period (longer the better); the size of the flows (bigger the better); and, the day to day variability of the flows.

In order to accurately detect changes in cycle flows, a statistically significant number of counts must be carried out. The information presented in Table 2, derived from national cycle count data, can be used as a first step towards selecting an appropriate sampling programme. For example, to detect an annual change of 20% in a flow exceeding 250 bicycles/day, with 90% confidence, at least 7 counts must be carried out every year at equivalent times.

Table 2: Number of counts required to accurately detect a given change in cycle flow

TIME OF YEAR TO COUNT

There is a good deal of data available to estimate the variations between daily, weekly and seasonal motorised traffic flows. Factors have been derived from this data to allow the conversion of short term data into that for longer periods. It is also possible to relate counts from one point in time to those of another. However, due to the absence of sufficient numbers of cycle monitoring sites in the UK, it is not possible to manipulate cycle data to the same degree of accuracy or confidence. Until such data is available, local authorities will have to rely on their own judgement. However, they might find it beneficial to refer to carry out counts at similar times of the year and in similar weather conditions.

Percentage Change			
10	20	30	40

Cycle Flow
250+
100-250
10-100

Number of Counts			
29	7	4	2
-	13	6	4
-	29	14	8

Figure 2 illustrates the differences in seasonal variations between cycling and motor vehicles at the national and local levels. It can be seen that, unlike motorised flows, cycle flows vary greatly at different times of the year. It is therefore difficult to relate counts at one point in the year to another, unless multi-year data is available.

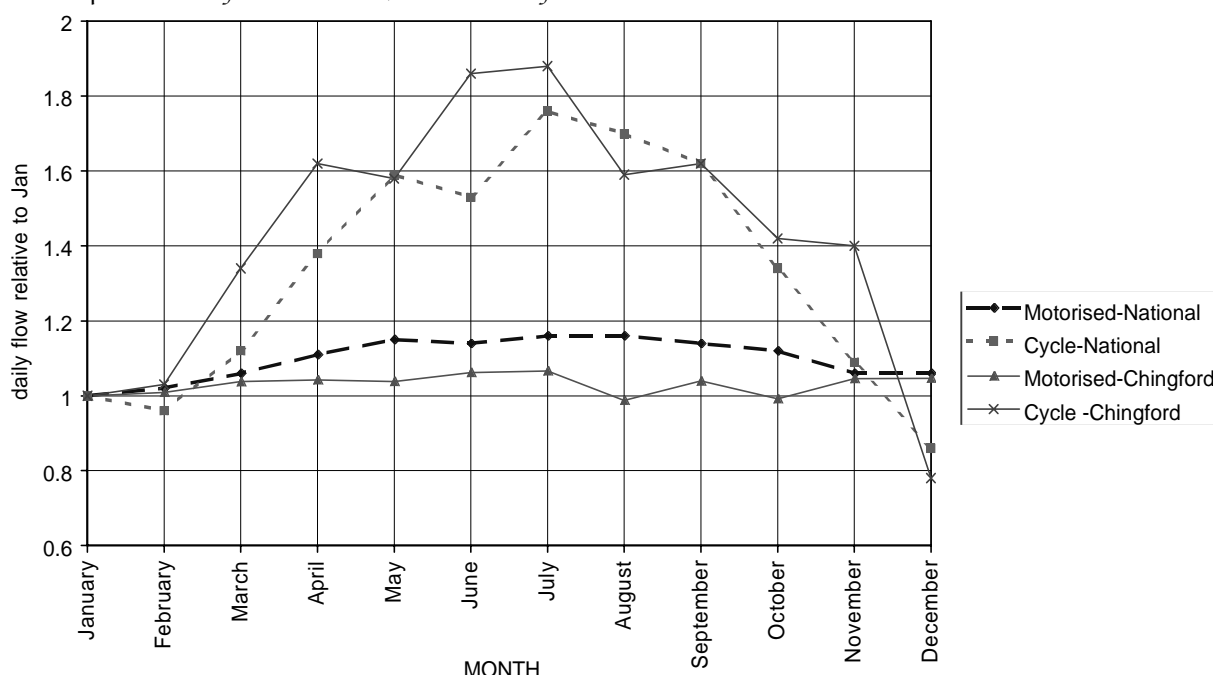


Figure 2. MONTHLY VARIATION IN MOTORISED VEHICLE AND CYCLE FLOW:

ESTABLISHING AN OVERALL CYCLE MONITORING STRATEGY

The first step of establishing an overall monitoring strategy is to set up a cordon or screenline system of cordon/screenlines. To maximise the accuracy of any cordon MCC, and reduce the number of enumerators required, counting stations should be located where cyclists are "funnelled", eg railway, canal or motorway crossings. The data derived from this can be supplemented with that obtained from long-term ATCs and national monitoring data.

The main problem with cordons is that cyclists may "leak through" by using minor roads and footpaths. This may lead to underestimates of cycling and uncertainties over observed changes through time. Nevertheless, cordon counts are probably the most practical way for a local authority to monitor cycling trends from one year to the next. Carrying out interview surveys, which include questions on trip origin, destination and purpose, can help to provide a more complete picture of cycling trends.

CONCLUSIONS

Monitoring cycle use at the local level is an important part of an overall strategy of encouraging more cycling in the UK. Without such data it would be difficult for highway authorities to know where best to direct scarce resources, and whether new initiatives have been effective. Combined with national data, it also provides an indication of progress towards the NCS cycle use targets.

The research carried out as part of this project indicates that, apart from a few local highway authorities, there is much to do before there is sufficient data available about cycle use at a local level. One of the main reasons for this is the difficulty of devising a system that provides both value for money and data that is statistically robust. It is hoped that this research and the interest and discussion it generates will encourage more highway authorities to embark on a cycling monitoring programme.

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The views in this paper are not necessarily those of the Department of Environment Transport and the Regions, nor of any organisations referred to in this paper. Any errors are solely the responsibility of the author.

THE USE OF COUNTING METHODS IN THE MONITORING OF THE IMPLEMENTATION OF A CYCLE-WAY NETWORK

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ENGLISH

THE USE OF COUNTING METHODS IN THE MONITORING OF THE IMPLEMENTATION OF A CYCLE-WAY NETWORK

In France, measuring systems concerning the bicycle use are rare.

This paper has two principal aims : to describe some bicycle counting methods, evaluating the interest of the data obtained, and to verify that these methods provide valuable information for the planning of a bicycle network. The method used consists of replacing a long monitoring period of counting in specific sites with a special treatment of factors (seasons, peak hours, weather, week-days), with a relatively short period of counting at many geographically different sites. The techniques used are numerous (manual, pneumatic, video ...).

Finally, the data obtained can be a very valuable tool in persuading local authorities to readapt their infrastructure policies to real bicycle use.

DEUTSCH

DIE ANWENDUNG VON ZÄHLMETHODEN BEI DER BEOBACHTUNG DER REALISIERUNG EINES RADWEGENETZES

In Frankreich sind Systeme zur Quantifizierung des Fahrradgebrauchs eine Seltenheit.

Dieses Referat verfolgt zwei grundsätzliche Ziele. Erstens sollen einige Methoden zur Zählung von Fahrrädern beschrieben werden, wobei auch die Bedeutung der gewonnenen Daten bewertet wird. Zweitens soll nachgewiesen werden, daß diese Methoden wertvolle Informationen für die Planung eines Radwegenetzes liefern. Die angewandte Methode besteht darin, einen langen Beobachtungszeitraum, während dessen an spezifischen Stellen Zählungen durchgeführt und verschiedene Faktoren (Jahreszeit, Spitzenzeiten, Wetter, Wochentage) speziell berücksichtigt werden, durch einen relativ kurzen Beobachtungszeitraum zu ersetzen, in dessen Verlauf an vielen unterschiedlichen geographischen Orten gezählt wird. Dabei werden zahlreiche verschiedene Methoden angewandt (händisch, pneumatisch, Video...).

Schließlich können die gewonnenen Daten ein sehr wertvolles Werkzeug sein, wenn es darum geht, die Lokalbehörden zu überzeugen, ihre Infrastrukturpolitik an den realen Fahrradgebrauch anzupassen.

FRIDAY

UPORABA METOD ZA PREŠTEVANJE V NADZOROVANJU IZVAJANJA ŠIRITVE KOLESARSKIH STEZ

V Franciji so sistemi merjenja uporabe koles redki.

Ta prispevek ima dva glavna cilja: opis nekaterih metod za preštevanje koles, ocenitev pomena dobljenih informacij in potrditev, da te metode zagotavljajo dragocene informacije za načrtovanje kolesarskih mrež. Pri metodi, ki smo jo uporabili, so dolga obdobja opazovanja in štetja na določenih mestih ter posebna obdelava faktorjev (letni časi, ure najpogostejšega prometa, vreme, delovni dnevi), nadomeščena z relativno kratim obdobjem štetja na večih geografsko raznolikih mestih. Uporabiti je moč veliko različnih tehnik (ročno, pnevmatično, video...).

Končno, so dobljeni podatki lahko dragoceno orodje pri prepričevanju lokalnih oblasti za prilagajanje infrastrukturne politike resnični rabi koles.

THE USE OF COUNTING METHODS IN THE MONITORING OF THE IMPLEMENTATION OF A CYCLE-WAY NETWORK

Annie-Claude SEBBAN

Most French local authorities have very little data about urban bicycle use. How is it evolving ? Who is cycling ? Where are cyclists riding ? Do cycling facilities correspond to cyclists requirements ?

Most of the time, the only available data are from household surveys. They can provide information on average transport use patterns, over long period of time, but are unable to give precise details of bicycle use.

Furthermore, the approach is heavily biased towards infrastructure proposals without looking at what cyclists actually want. This leads to situations where new cycling facilities are little used because they are not adapted to cyclists' needs. In addition to this lack of information on cycling network use, local authorities have no way to measure the impact of the cycling facilities that they have provided.

Local authorities, therefore, find it difficult to react to cycling problems (such as an accident on a roundabout, or non-use of a cycle-way), even if they are directly responsible for the network.

On the other hand, these same local authorities have a much more precise approach to the question of public transport : using usage rates per line, peak hours, customer categorisation etc.

In this paper, we would like to show that it is possible for a bicycle development policy to follow the evolution, or the non-evolution in some cases, of bicycle use on new bicycle specific facilities. The method proposed is cheap, uses simple techniques, and can provide data over long periods of time.

The following proposals are based on our experience working as consultants for many French local authorities.

Even though counting methods are regularly used in road use analyses they are, inexplicably, little used in France, to study the effect of bicycle use policies and their evolution.

Firstly, we will look at the application of counting methods to bicycle facilities and urban bicycle use. Secondly, we will define the different counting techniques which are currently available. Finally, using our experience as consultants, in France, we will suggest what we believe is the most efficient approach to the monitoring of the implementation of a cycle-way network.

Doc 1 - Grenoble, France : Bicycle flow by roads (1998).

Why counting ?

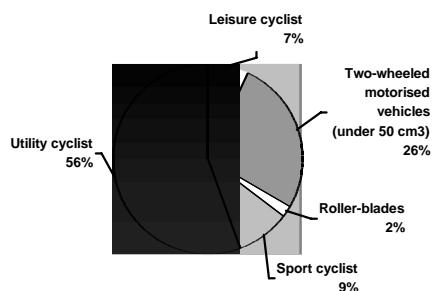
- To identify priorities in terms of bicycle facilities. Bicycle flow can be different from one street to the next : bicycles as a proportion of total traffic can vary from 2 to 12%. With counting methods (counting cyclists), we can produce a hierarchy of cycling places (doc 1), given enough information to allow the provision of new facilities to optimise urban cycling.
- To discover the proportion of cyclists relative to other modes of transport. The evolution of each mode of transport can be followed, providing a comparison of bicycle flow with that of car and public transport, for a stretch of road. With these flow data, the impact of a new bicycle facility can be observed by simply comparing



before and after data.

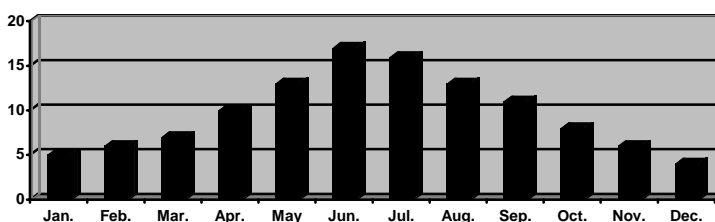
- To analyse the behaviour of cyclists. For example, at a crossroads, manual counting gives a very good view of cyclists behaviour : how they use the new facility ? Do they respect traffic lights ? What kind of accident risk are they facing ? Sometimes, these observations can force a radical rethink of the facility itself.
- To estimate the impact of the bicycle facility. Is the bicycle facility used enough by cyclists or not ? Is cycle flow increasing ? How many cyclists don't use it and still use the road with other traffic ? Counting methods can help us to improve bicycle facilities, or they can be used simply to monitor the ways cyclists use them.
- To pin-point the type of facility needed. As we have already seen, the design of bicycle facilities doesn't always take cyclists into consideration. The attitude of cyclists can be very different, be they young or old for example, or whether they cycle for sport or just to relax (doc 2). Counting methods must incorporate a long enough observation period to enable the type of cyclist concerned to be identified and thereby provide facilities that are adapted to their needs.

Doc 2 - Grenoble, France, types of bicycle users (1998).



However, these methods have some methodological difficulties : seasons, peak hours, weather and week-days. The season is a very important factor in bicycle use (doc 3) : the number of cyclists in December, in Grenoble (France) is only 30% of the number in June. The weather is also an important factor : rain and cold severely reduce the numbers of cyclists. There are also important differences between week-end and week-day cycle use, and between peak and off-peak times. Cyclist's motives are very different to those of motorists and cycle use through the day or through the week can show a very different distribution to car use.

Doc 3 - France, average of bicycle traffic by month / season (1998)



These factors make counting methods unrepresentative of reality unless they take into account average daily bicycle use data.

As cycling consultants, we've been experimenting with a number of counting techniques (doc 4) :

- The visual manual counting consists of counting cyclists, noting their direction and the type of cyclist (sport, leisure etc.). At the same time, the counter can count two-wheeled motorised vehicles (scooters, motorcycles), disabled people, joggers, pedestrians and roller-bladers. Possible dangers are noted : children, adults and older people, cycling at different speed. The use, or not, of the cycling facility can be quickly observed by the counter. At junctions, it is possible to analyse the number of times cyclists have to stop, their movements, and, of course, classic data such as time, direction of traffic etc.

We believe that bicycle counting should be done, systematically, at junctions, because there are more roads which can be observed and conflicts and potential accident problems can be identified and analysed. In this way, counting periods can give " snap-shot " pictures of cycle use which can be incorporated into a bicycle traffic analysis.

But as we have said, manual counting methods have their limits unless they incorporate annual fluctuation data. Long counting periods (of several weeks for example), have the further disadvantage of incurring relatively high labour cost.

- By combining a manual counting method with a mechanical, many of these problems can be overcome as mechanical methods allow data to be collected over long periods of time. When associated with hourly, daily, and monthly weather data, the results can be used to adjust manual counting data. As mechanical methods record speed, the type of cyclist can be deduced, giving further useful information for the design of new facilities. The main drawbacks of mechanical methods are that they give any qualitative information and that they don't distinguish between different types of vehicle. They are

therefore, only suitable for use on cycle paths. It's also difficult for mechanical methods to record groups of cyclists. The margin of error (5 to 10%) increases with volume of traffic. Data supplied by this method must be reajusted every time.

- Pneumatic counting methods are also interesting, recording the passage of bicycle by way of cable. These counters are sold in France by Sterella.
- Infra-red methods, which count cyclists as they cut an infra-red beam are unreliable as only one vehicle is recorded, even when a whole group of vehicles crosses the beam at the same time. Despite being cheap they are, therefore, unsuitable for counting cyclists.
- Magnetic field sensors, placed in the road surface, provide another method. They can record and differentiate between different types of vehicles (truck, car, bicycle) due to differences in weight. However, sensors are usually placed in the middle of the carriageway not on the sides where most of the cyclists ride, and they do not detect non-ferrous frames (e.g. carbon, aluminium alloy...), so again it is not a reliable method for counting cyclists.
- There is a method, based on a change of capacitance of an electrical wire when a vehicle rolls over it, which can distinguish between different types of vehicles. Unfortunately, this particular piezzo-electrical method is currently unavailable in France.
- Video is used to monitor vehicle movements (types of vehicles and their behaviour) on some major roads in France. Technically this method could be very easily adapted to bicycle monitoring but its use remain very limited at the moment .
- The Technical Equipment Research Centre (CETE), in south-west France, has experimented a bicycle counting technique based on aerial photography. Because of its cost, complex operation (numerical pictures, use of an aircraft), and its " snape-shot" vision, this method is little used.

Doc 4 - Bicycle counting methods

	Detection	Advantages	Drawbacks	Cost	Use
Pneumatic	Pneumatic pressure, cable, sensors	Reliable, cheap, easy to use	Can be stolen	600 to 800 Euros	Car and bicycle counting
Infrared	Record cutting of infra-red rays	Cheap	Unreliable, fragile		Counting pedestrians
Magnetic field	Detect ferrous metals	Reliable, available from local authorities	Difficult to use		Useful for dynamic traffic management
Video camera	Computerised identification of shapes	Invaluable for monitoring cycling direction and conflicts	Inadapted to urban areas, fragile	8000 Euros	Major roads
Aerial	Aerial numerical photography	Efficient over a large area	Complex operation	Expensive	
Piezzo sensitivity	Electrical wire	Easy to use	Not available in France	Cheap	Counting bicycles
Manual	Human observer	Very accurate for qualitative information	Cost	Expensive	Long counting periods

So,
which

technique to choose amongst all these ?

Based on our experience in French cities, we are able to say that the best approach to monitoring the implementation of a cycle-way network is to use a mixture of three techniques : one-day manual counting, on a small number of sites (to study the typology of users), a mechanical counting method (to readjust data and define variation ratios), and a peak hours traffic counting (cheaper). This three-pronged approach will give an accurate picture of bicycle use in any place (cycle-way, roads etc.), the types of cyclist involved and their needs. This information is vital for anyone who wishes to analyse and design new bicycle facilities that are well adapted to the needs of cyclists.

We have just presented a few methods for measuring bicycle use and its evolution, and we would be very interested in discussing these ideas and any others which you may have.

METHODS OF EVALUATION OF SEVERANCE EFFECTS OF LARGE INFRASTRUCTURES ON CYCLE TRIPS`

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ENGLISH METHODS OF EVALUATION OF SEVERANCE EFFECTS OF LARGE INFRASTRUCTURES ON CYCLE TRIPS`

Large infrastructures (such as motorways, highways, railways or waterways) and large plots of land (industrial areas, shopping centres, urban parks...) often constitute obstacles for cyclists. Either they are impassable, or they are dangerous, difficult or very long to cross. Very busy thoroughfares are not only difficult to traverse, but also - and above all - dangerous to travel on, in the absence of cycling facilities. When one considers "severance effect" in this broad sense, it becomes apparent that this phenomenon alone accounts almost entirely for the disappearance of cyclists in many European towns. This paper will present methods of representing and assessing the impact of the "severance effect" of large infrastructures on the length of cycle trips.

DEUTSCH METHODEN ZUR EVALUIERUNG DER TRENNWIRKUNG GROSSER INFRASTRUKTURELLER EINRICHTUNGEN AUF DEN FAHRRADVERKEHR

Große infrastrukturelle Einrichtungen (z.B. Autobahnen, Schnellstraßen, Eisenbahnlinien oder Wasserwege) und große Grundstücke (Industriegebiete, Einkaufszentren, Stadtparks etc.) stellen für die Radfahrer oft Hindernisse dar. Sie sind entweder unpassierbar oder ihre Überquerung ist gefährlich, schwierig oder langwierig. Stark befahrene Durchfahrtsstraßen sind nicht nur schwer zu überqueren, sondern insbesondere auch gefährlich zu befahren, falls keine speziellen Vorkehrungen für Radfahrer vorhanden sind. Wenn man die „Trennwirkung“ in diesem weiten Sinne bedenkt, so zeigt sich, daß in vielen europäischen Städten dieses Phänomen praktisch allein für das Verschwinden der Radfahrer verantwortlich ist. Dieses Referat präsentiert Methoden zur Darstellung und Bewertung der Auswirkungen des „Trennwirkung“ großer infrastruktureller Einrichtungen im Verlauf von Radrouten.

SLOVENSKO METODE OCENJEVANJA UČINKA LOČEVANJA VELIKIH INFRASTRUKTUR NA KOLESARSKE VOŽNJE

Velike infrastrukture (kot so avtoceste, železnice ali vodne poti) in velike zemljiške parcele (industrijska območja, nakupovalna središča, urbani parki) za kolesarje pogosto predstavljajo ovire. Te so lahko neprehodne, nevarne, težavne ali pa zelo dolge za prečkanje. Zelo prometne ceste niso samo težavne za prečkanje, temveč tudi - in predvsem - je po njih nevarno potovati, če ni ustreznih kolesarskih objektov. Če razmišljamo o učinku ločevanja v tem širokem smislu postane jasno, da posledično prihaja do zmanjšanja števila kolesarjev v mnogih evropskih mestih. Prispevek bo predstavil metode predstavitve in ocenjevanja vplivov "učinka ločevanja" velikih infrastruktur na dolžino kolesarskih voženj.

METHODS OF EVALUATION OF SEVERANCE EFFECTS OF LARGE INFRASTRUCTURES ON CYCLE TRIPS'

Severance effect develops as soon as any element of the urban landscape becomes difficult, or impossible, to cross for certain users, essentially cyclists and pedestrians, who are by far the most affected. The term "barrier" is used to designate any element producing a severance effect.

The French term "effet de coupure", or "cutting effect", is quite strong. Both the English and the Germans prefer to use the expression "severance effect", or "Trennwirkung", and the Dutch and the Swedish, "Barriere-werking", "Barriäreffekter", or barrier effect [de Boer, 1991]. Some authors talk of spatial ruptures [Sognel, 1994], or even discontinuity. The terms employed are, of course, not neutral.

The methods used to assess severance effects are still rudimentary, even today. Cyclists are forgotten more often than not, and generally only the time pedestrians spend at traffic lights waiting to cross very busy roads or to use grade-separated crossings is measured [Appleyard, 1981; Boer, Hendriks, 1984; Lervag, 1984; Russell, Hine, 1996]. The issue is in fact really much broader than this and its consequences much greater.

We will first present a typology of barriers, then further thoughts on crossings (II). Lastly, we will derive several methods of assessing severance effects (III).

I - A TYPOLOGY OF BARRIERS

1. Natural and artificial barriers

A great number of barriers are due to the natural layout of a site. These are:

- differences in level: cliffs, mountains, steep hills... or gullies, deep valleys...
- waterways or stretches of water: rivers, ponds, lakes, seas, oceans...

We will be more particularly concerned here with artificial cuts, caused by human activity.

2. Linear and surface area barriers

Linear barriers are obstacles which are much longer than they are wide; their breadth can therefore be considered to be negligible. Concretely, these are:

- major roadways: motorways, by-passes, expressways, boulevards, avenues...
- railroads: railway lines, railway junctions...
- waterways: canals, rivers or channelled rivers.

Non-linear barriers are obstacles whose length and breadth are similar. Concretely, these are:

- enterprise zones: industrial estates, shopping centres, service industry hubs, including quarries, marshalling yards, ports, airports, hospitals, administrative centres...
- parkland: parks, woods, cemeteries...
- large housing blocks, and more generally, any piece of land which can not be traversed or an impassable area.

For cyclists, certain streets can be used, but only with difficulty or at reduced speed: pushing a bicycle on foot, or cycling at walking pace. These are blocks with pedestrian streets closed to bicycles, or no-entry streets.

3. Severance effects caused by roads and other barriers

Severance effects caused by roads (in urban areas) are related to the manner in which the road network is organised to the advantage of motor traffic. These barriers are distinct from others in that they are designed to make travel easier. In reality, they are more often than not advantageous to motorists alone, while being to the detriment of non-motorised users, i.e. they facilitate long trips, at the expense of local travel, increase accessibility of distant places to the detriment of accessibility of closer destinations. They therefore deserve close attention.

4. Impassable roads and inaccessible roads

Impassable roads are roads which are difficult or impossible to cross for non-motorists:

- motorways, by-passes, expressways... are impassable without grade separated crossings,

- other roads with dense or fast motor traffic are perceived by non-motorists as dangerous to cross, unless there is a sufficient number of crossings "protected" by traffic lights, speed bumps, ground markings, vertical sign-posting...

Inaccessible roads are those roads which can not be used by non-motorists, either because they are forbidden from entering them or because of unacceptable safety conditions.

- Pedestrians and cyclists are denied access to motorways, by-passes, expressways, flyovers and also often to tunnels.
- Other roads with heavy or fast motor traffic are not often used by pedestrians and even less so by cyclists, who consider them to be dangerous, unless they are especially fitted out with sufficiently safe roadside facilities for walking and cycling.

Furthermore, a particular section of a road can be considered to be inaccessible by the non-motorised user.

- This is often the case when an urban expressway leads out from the city centre to the suburbs through an area where defence works once stood and where a ring road or large-scale facilities have been constructed: the street suddenly becomes a highway for several hundred metres, with speeds well above the 50 kph limit.
- This is also sometimes the case when one or several slip-roads of an expressway link up with an access network: the vehicles coming from the expressway come out at excessive speeds into the street or, on the contrary, already start accelerating in the street on approaching the expressway slip-road.

II - CROSSINGS

If an obstacle can not be removed, then it is usually possible to lessen the severance effect by means of a crossing, or even to do away with it altogether at the crossing point. Unfortunately, many crossings are so poorly designed that they create more problems than they solve: either they are quite simply unsafe (e.g. a bridge with heavy traffic flow, a badly protected passage...), and then they themselves become barriers, or they require such an effort (detours, differences in level...) that people are dissuaded from using them, to the detriment of their safety.

1. Absence of a crossing

It does happen that no alternative has been envisaged for non-motorised users who have quite simply been forgotten or neglected. It occurs more frequently that crossing points cater for pedestrians only: footbridges or subways which the cyclist is obliged to climb, carrying his or her bicycle. In the case of a linear barrier (motorway, railway... and also a very busy boulevard), there is seldom a sufficient number of crossings.

In order to be able to cater for utilitarian use, a crossing must be accessible all day and throughout the year. Yet city parks are almost always closed over night and it is therefore impossible to traverse them during the morning and evening rush periods in winter. More generally, roads which carry heavy traffic can be used by cyclists only during off peak hours: early in the morning, in the evening, on Sunday mornings.

2. Dangerous or inconvenient crossings

Crossing a busy road is always dangerous. However, there is plainly a threshold related to traffic density and/or vehicle speed, beyond which such or such a category of users considers that it is dangerous to cross [Davis, 1992; Gambard et al., 1995]. Grade-separated crossings are rarely well-designed: a bridge too narrow, an uncovered footbridge too windy. A narrow tunnel, badly lit, resonant, noisy, dirty or tagged is seen to be cause for anxiety.

3. Long or difficult crossings

It sometimes takes a long time to cross a barrier: the time needed to reach the facility, added to the time spent using the facility itself. In addition, the energy required of non-motorists to use certain installations is sometimes quite excessive: a grade-separated passage with staircases only...

Average waiting times at the traffic lights on a very busy boulevard are quite long. At pelican crossings, the lights generally react after an extremely long period. Lights operated by a loop in the pavement do not react to the presence of a cyclist who is badly positioned.

A pedestrian zone closed to cyclists or a no-entry street must be crossed on foot, with the cyclist pushing the bicycle (if the cyclist does not avoid it, as often happens, by passing along busy streets at his or her own risk), which triples

journey time.

III - ASSESSING SEVERANCE EFFECTS

Various indicators for assessing cuts can be derived from the above considerations.

1. The existence, frequency and quality of crossings

For non-linear barriers, the existence or not of crossings is the only possible indicator. A city park, a pedestrian zone, a big hospital, a shopping area, or a large cemetery, all need to be able to be traversed on foot or by bicycle, even if at "walking pace". Furthermore, the crossings must not only exist, but also be accessible throughout the day.

With respect to linear barriers, the number of crossing points per kilometre is a simple and logical indicator. Minimum spacing depends on the breadth of the barrier and the density of population and activities in the vicinity. For a boulevard, a protected zebra crossing every 100 metres is a minimum. For a motorway or a railway, it is necessary to erect a grade-separated crossing every 200-300 metres. For a river or a canal... this depends above all on their width.

Lastly, the quality of a crossing can be assessed by means of a very simple multi-criteria analysis. Four criteria can be applied: 1/ the volume of motor traffic flow over the crossing, 2/ the change of level required by the crossing, 3/ the time needed to cross, 4/ the comfort and pleasantness of the crossing. Each crossing can in this way be given a grade and the quality of existing and planned crossings compared.

2. The proportion of accessible roads

To determine if the road network is accessible to bicycles, it is sufficient to calculate the length of the road network (existing data), including cycling tracks, and to deduce from this:

- the length of the roads closed to cycles (pedestrian streets, urban expressways,...),
- the length of the roads without cycling facilities and carrying traffic over a certain level considered to be intolerable (e.g. more than 15 000 cars per day) or travelling at an excessive average speed (e.g. more than 50 kph),
- the length of one-way streets without a cycling track in the opposite direction, divided by 2.

The percentage of roads accessible to bicycles compared with the total road system (km/km) can be deduced from this. The ratio needs to be close to 100% for a town to be bicycle-friendly (some towns have a ratio of less than 50%).

The reasoning is similar for pedestrians, but one-way streets do not constitute a problem.

3. The average detour

The lengthening of a journey, or the detour, is the ratio between the distance covered using the road network and the ideal distance, as the crow flies. The average detour is the average of all the detours corresponding to trips in the town [Schaur, 1991]. It expresses perfectly the constraints due to the form of the road network. It is an indicator by which a direct assessment of the global impact of barriers in a town can be made.

However, as it is defined in the introduction, a severance effect develops as soon as it is impossible to travel across an urban area. Urban space is not virgin land and it is therefore marked by many barriers. Consequently, there exists a normal average detour corresponding to the detour needed to be made on average in a town with a sufficiently well-developed road network. It can be shown that in a European town with a good road structure, detours are on average about 20-25 % . It can be considered therefore that there is truly a severance effect only if an obstacle causes a detour greater than 25%, or 35% at least. In the same way, the average detour can be considered to be abnormal if it reaches 30% at least.

The average detour can be assessed in two ways: either by taking into account the total number of possible trips, i.e. from all points of the urban area to all the others (the theoretical approach); or by taking into account all the trips actually made, i.e. observed, for a given period, by a representative sample of the town's inhabitants (the empirical approach).

The calculation of the theoretical average detour necessitates a large number of simplifying hypotheses, while the calculation of the actual average detour supposes a heavy survey on travel based on a representative population sample. Consequently, we are presently exploring a third technique, using the possibilities offered by computer science.

It is possible to use other global indicators, but these are much less satisfactory.

4. Cartographic representation of severance effects

The various barriers can easily be portrayed on a map by means of a series of simple graphic conventions. Linear barriers are shown by a more or less thick line, according to their being more or less impassable. e.g. 200-500 m, a thin line; 500-1000m, a line of average thickness etc. Different colours distinguish the different types of linear barriers: roads, railways, waterways and also pedestrian streets closed to cyclists, no-entry streets... Non-linear barriers are represented by solid colours covering all the surface concerned. The number of hectares is indicated in the centre of the cut. A crossing - at ground level or grade-separated - is indicated by a double-headed arrow.

The map of barriers thus drawn up for each mode (walking and cycling) reveals totally inaccessible sites, others very difficult of access. The surface of these sites can be hatched accordingly and their area in hectares indicated.

Conclusion: Severance effect, is often used to mean the difficulty of crossing an infrastructure - for safety reasons or because it is impossible - and the consequences of this: community severance, separate development of areas... From this point of view, this is of little or not concern to cyclists.

The issue is in fact a much broader one. As we have seen, severance effect is the consequence, not only of infrastructures which are difficult or impossible to cross, but also of roads made inaccessible by the dangers caused by traffic density. Cyclists are therefore concerned first and foremost. In other words, the dangers of motor traffic are the major cause of severance effect. The almost total disappearance of cyclists in many European towns can be explained, essentially - for at least 2/3 - by these barriers.

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BICYCLE TRAFFIC AT ROUNDABOUTS : NEW DUTCH GUIDELINES

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BICYCLE TRAFFIC AT ROUNDABOUTS : NEW DUTCH GUIDELINES

To help increase the level of safety on roundabouts in the Netherlands CROW set up recommendations to attain a greater measure of uniformity in the situations governing right of way, the design and equipment deployed at and on roundabouts.

The guidelines mean that:

- The motorised traffic on roundabouts always has right of way over traffic joining from the approach roads.
- Within built-up areas cycle traffic has right of way on roundabouts and it is preferable to allow free and unimpeded passage to pedestrians.
- Outside built-up areas cycle traffic is not given right of way and pedestrians are not automatically given free passage.

The paper examines road safety, capacity of various design elements, particularly those pertaining to cyclists.

ENGLISH

FAHRRADVERKEHR AN KREISVERKEHREN: NEUE NIEDERLÄNDISCHE RICHTLINIEN

Um zur Erhöhung der Sicherheit von Kreisverkehren in den Niederlanden beizutragen, hat das CROW Empfehlungen erarbeitet, um größere Einheitlichkeit in Bezug auf die Vorrangsituation, die Auslegung und die Ausstattung von Kreisverkehren zu gewährleisten.

Diese Richtlinien besagen, daß

- der motorisierte Verkehr im Kreisverkehr immer Vorrang gegenüber den in den Kreisverkehr einfahrenden Verkehrsteilnehmern genießt.
- in verbauten Gebieten der Fahrradverkehr in Kreisverkehren den Vorrang hat und es empfehlenswert ist, den freien und ungehinderten Übergang von Fußgängern zu erlauben.
- außerhalb der verbauten Gebiete der Fahrradverkehr keinen Vorrang genießen soll und auch den Fußgängern nicht automatisch freier Übergang gestattet wird.

Das Referat untersucht die Straßensicherheit und die Kapazität verschiedener Konstruktionselemente insbesondere in Bezug auf Radfahrer.

DEUTSCH

KOLESARSKI PROMET V KROŽNEM PROMETU: NOVE HOLANDSKE SMERNICE

Za povečanje ravni varnosti v krožnem prometu na Nizozemskem je CROW (Information and technology centre for transport and infrastructure) pripravil priporočila za doseganje večje poenotenosti v primerih dodeljevanja prednosti v prometu, oblikovanja ter opreme uporabljene pri in v krožiščih.

Priporočila pravijo da:

- ima motoriziran promet v krožiščih vedno prednost pred prometom, ki se vključuje iz dostopnih strani
- ima kolesarski promet v krožiščih v naseljih prednost in zaželeno je, da je pešcem omogočen prost in nemoten prehod
- da kolesarski promet zunaj naselij nima prednosti in pešcem prost prehod ni avtomatično omogočen

Prispevek raziskuje varnost na cesti, zmožnosti različne infrastrukture, predvsem tiste, ki se nanaša na kolesarje.

SLOVENSKO

BICYCLE TRAFFIC AT ROUNDABOUTS: THE NEW DUTCH GUIDELINES

1 INTRODUCTION

In many countries roundabouts have provided an indispensable solution to traffic intersections for years. This is not without good reason, as roundabouts are an exceedingly safe form of traffic intersection. By now more than 1000 roundabouts have been constructed in the Netherlands, both in as well as outside built-up areas, however the variation in designs and right of way situations applying to them remains very diverse. This leads to confusion among road users (motorists, cyclists and pedestrians) as to which traffic regulations apply and exactly what type of behaviour is to be expected, which in turn then has an adverse effect on traffic safety.

In 1998 new guidelines were presented to gain more uniform layout design of individual roundabouts together with the various design elements included at such roundabouts.

The basic premise in standardizing roundabout design is that motorized traffic always has right of way on roundabouts over traffic converging on roundabouts from their approach roads. This applies within as well as outside built-up areas. It has also been decided to allow cyclists right of way on roundabouts within built-up areas. By establishing a uniform design of roundabout and segregated cycle track together with clear traffic signing and road marking, a safer traffic situation is thereby created for all road users, including cyclists.

Cyclists do not have right of way outside built-up areas. Not only are traffic speeds generally higher outside built-up areas, but motorists also tend to see cyclists with a different perspective regarding the behaviour they anticipate from them. In rural areas, a cyclist may often be an unexpected element in traffic.

The right of way situation prevalent at roundabouts should be made clear by means of traffic signs, but this should be further reinforced by a design that is unmistakable to all road users together with a conspicuously clear layout and standard recognizable equipment used on roundabouts. The guidelines on roundabouts include concrete recommendations to this end.

2 SAFETY AT ROUNDABOUTS

A number of studies have been carried out over the last few years into the matter of safety on roundabouts. These studies have primarily been aimed at:

- the safety of roundabouts compared to other types of intersection,
- the safety of cycle lanes as opposed to segregated cycle tracks,
- cyclists having right of way or not having right of way and
- the relationship between safety and the design of roundabouts.

From research carried out it emerged that a roundabout is a relatively safe form of intersection, which on average experiences less accidents or at least less occurrence of serious accidents than other types of intersection. When a conventional form of intersection is converted into a roundabout the results can be quite striking. The number of traffic accidents may be halved and the number of injured victims can be reduced by up to seventy-five per cent. Studies also showed that roundabouts with segregated cycle tracks are safer than roundabouts with a simple cycle lane running around the edge or than roundabouts with no cycle provisions whatsoever.

For a number of years now roundabouts have been constructed with segregated cycle tracks where the cyclists on the roundabout are granted right of way over traffic converging on the roundabout from the approach roads. This solution fits in very nicely with the policy of promoting bicycle use and the interests of cyclists, especially giving them right of way. The problem with this, however, is that road safety is on average reduced on roundabouts where cyclists have right of way compared to roundabouts where they are not given right of way. It was apparent however that the degree of road safety varies from one location to another. This could be explained in part by the differences in traffic volume occurring from one place to another and partly by the design of the roundabouts studied.

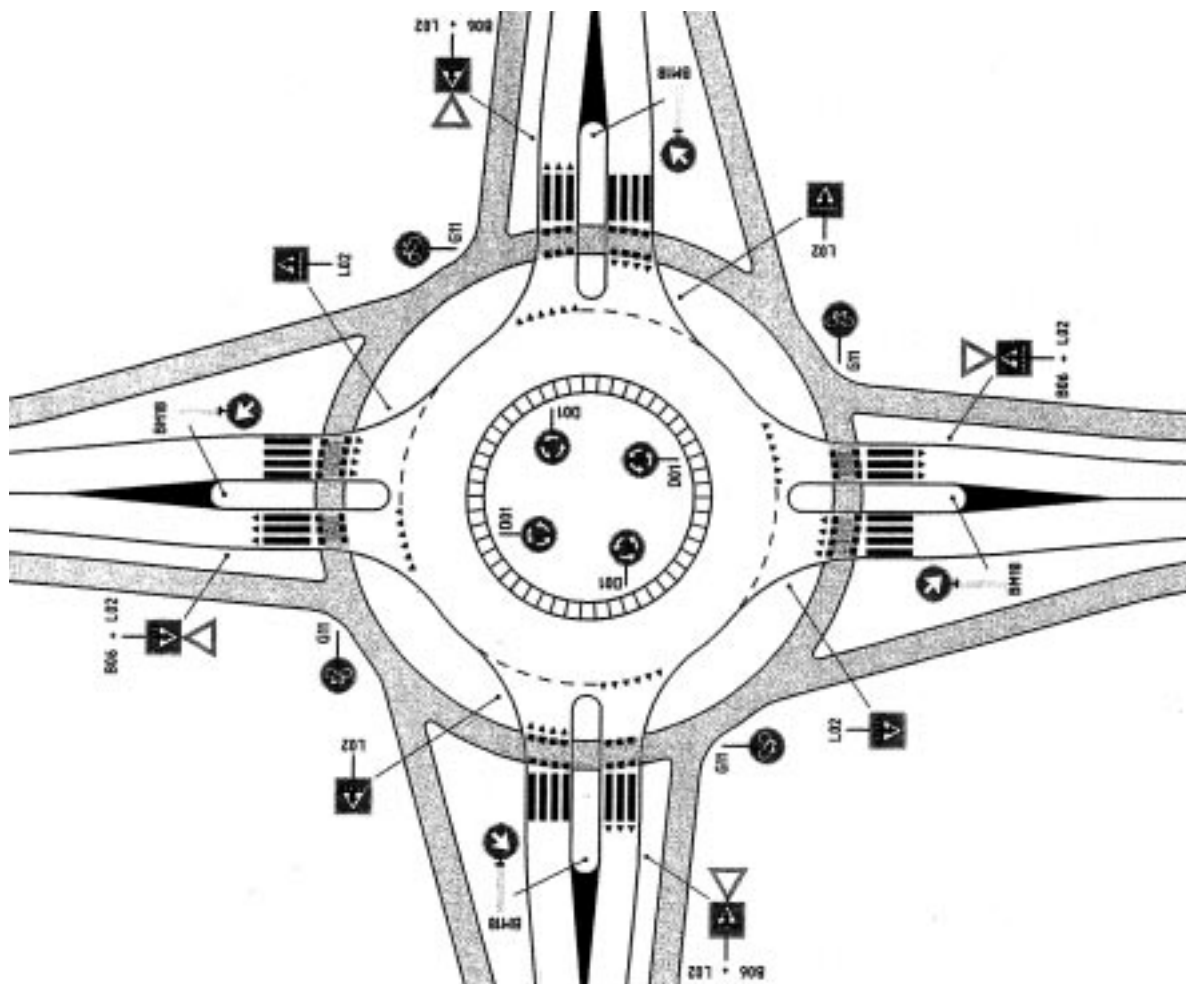
A road design or layout which makes it clear to all road users exactly who has right of way at any particular point strongly helps to raise the measure of road safety, including in situations where cyclists have right of way on roundabouts.

3 CAPACITIES OF ROUNDABOUTS IN RELATION TO CYCLE TRAFFIC

The capacity endorsed for a single lane roundabout is set at between 20,000 and 25,000 motor vehicles per twenty-four hour period. The capacity of two-lane roundabouts strongly depends on the number of traffic lanes on the approach roads. If the approach roads to a two-lane roundabout are dual carriageway then the capacity will be about 35,000 to 40,000 motor vehicles per twenty-four hour period. If the approach roads are single carriageway then the capacity of a two-lane roundabout will only be 22,000 to 30,000 motor vehicles per twenty four hour period.

The lowest value applies where cyclists have right of way and there is free though passage for pedestrians. The higher value applies in situations where there are no cyclists or pedestrians or where they are not given right of way or free through passage.

Figure 1 Design and traffic signing of a roundabout where the cycle tracks have right of way (in built-up areas)



4

UNIFORM DESIGN

The situation regarding right of way for cyclists is made clear while they are still on cycle tracks, the features encountered at a crossing, distance from cycle crossings to roundabouts and the future position of moped traffic are indicated in advance.

In built-up areas cycle traffic has right of way and cycle tracks are in a continuous circuit and constructed in red pavement material (the characteristic colour for cycle tracks in the Netherlands), the distance between cycle tracks and roundabouts is a mere five metres (thereby rendering the cycle track for legal purposes as a component of the roundabout), though in the near future mopeds will be obliged to ride on the carriageway and not on the cycle track.

Outside of built-up areas, cycle traffic does not enjoy right of way, which is made clear by an intermittent cycle track system with no distinctively separate colour for cycle crossings and where

cycle tracks are at a minimum distance of 10 metres away from roundabouts (thereby ensuring that cycle tracks are not legally classified here as a component of roundabouts). Outside built-up areas, mopeds ride on cycle tracks.

5 DETAILS RELATED TO CYCLE TRAFFIC

When designing the layout of roundabouts, particular attention should be given to certain essential design elements, especially the elements related to the cycle traffic.

5.1 General layout

Within built-up areas an external radius of 16 m is promoted and outside built-up areas a radius of 18 m is applied. An internal radius of 10.50 m has been opted for within built-up areas and 12.75 m outside built-up areas. Due to the above the carriageway width within built-up areas is at 5.50 m and outside built-up areas at 5.25 m.

5.2 The crossings for slow moving traffic

Slow moving traffic, cyclists and pedestrians, may cross the entry and exit of approach roads in two stages if a pedestrian reserve is applied as central traffic islands. These should have a minimum width of 2.50 m within built-up areas and as much as 3 m outside built-up areas. This will offer adequate space for being able to safely use such traffic islands for waiting for a gap in traffic when crossing the road. Depending on the right of way situation the length of a central traffic island will vary between 14 and 15 m.

6 FROM GUIDELINE TO PRACTICAL APPLICATION

The guidelines for roundabout construction which were published in March 1998 gave direction for designing new roundabouts and for converting existing roundabouts in The Netherlands. The guidelines are not binding to Highways Authorities, though they are strongly recommended by the Dutch Minister of Transport, the joint provincial authorities, local authorities and rivers and waterways authorities.

Many new roundabouts are currently being designed which already comply with the guidelines, though it may take some years yet before the majority of roundabouts in The Netherlands comply with the desired design described in the guideline.

With the guideline a first step has been taken towards making a lot safer existing roundabouts and other intersections in The Netherlands.

BICYCLE PATHS ON ROUNDABOUTS , RIGHT OF WAY OF BICYCLES, AND SAFETY.

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BICYCLE PATHS ON ROUNDABOUTS , RIGHT OF WAY OF BICYCLES, AND SAFETY

In the past years, there has been a discussion in the Netherlands on bicycle >paths on roundabouts. Can the bicyclist safely have right of way if he is on the bicycle path?

We questioned 125 bicyclists on roundabouts with bicycle paths without >right of way for bicyclists. Bicyclists had severe problems in determining >if a car would leave the roundabout.

The right of way on these roundabouts was changed in favour of the bicyclists. After this change 90% of the bicyclists said the situation >was better than before. The bicyclist who came on the roundabout as a >car-driver thought the new situation was better for car-drivers as well.

Suggestions for improvement of the safety are given.

ENGLISH

FAHRRADSPUREN IN KREISVERKEHREN, VORRANG FÜR RADFAHRER UND SICHERHEIT

In den vergangenen Jahren wurde in den Niederlanden über Fahrradspuren in Kreisverkehren diskutiert. Kann ein Radfahrer sicheren Vorrang genießen, wenn er sich auf der Radspur befindet?

Wir haben 125 Radfahrer an Kreisverkehren mit Radspur, jedoch ohne Vorrang für Radfahrer befragt. Die Radfahrer hatten große Probleme, zu erkennen, ob ein Auto aus dem Kreisverkehr ausfahren würde oder nicht.

Die Vorrangsituation an diesen Kreisverkehren wurde zugunsten der Radfahrer geändert. Nach dieser Veränderung erklärten 90% der Radfahrer, die Situation habe sich gebessert. Der Radfahrer der als Autofahrer den Kreisverkehr benutzte, war der Meinung, die neue Situation sei auch für Autofahrer besser.

Außerdem werden Empfehlungen für eine Verbesserung der Sicherheit gegeben.

DEUTSCH

KOLESARŠKE STEŽE V KROŽNEM PROMETU, PREDNOST KOLESARJEV IN NJIHOVA VARNOST

Na Nizozemskem so v preteklih letih imeli razprave o kolesarskih poteh v krožnem prometu. Ali lahko ima kolesar varno prednost, če je na kolesarski stezi?

Anketirali smo 125 kolesarjev v krožiščih s kolesarskimi stezami brez prednosti za kolesarje. Ti so imeli velike probleme z ugotavljanjem, ali bo avto zapustil krožišče.

V teh primerih je bila prednost spremenjena v prid kolesarjem. Po spremembi je 90 % kolesarjev situacijo ocenilo bolje kot prej. Kolesarji, ki so v krožišče prišli kot vozniki avtomobilov so menili, da je takšna situacija boljša tudi za voznike. Podani so predlogi za izboljšanje varnosti.

SLOVENSKO

BICYCLE PATHS ON ROUNDABOUTS , RIGHT OF WAY OF BICYCLES, AND SAFETY.

HISTORY

There has been a discussion in the Netherlands in recent years about bicycle paths on roundabouts. Can the cyclist safely have right of way if he is on the bicycle path ?

In the Netherlands, bicycles coming from the right have to give way to cars coming from the left (and from the right). This is a rule the Nazis installed (they had cars, the Dutch had bikes) and which is still valid. It will be changed in 2000 or 2001. This rule has had an enormous impact as to how people look at bicycles and cars, as it supported a tendency to let cyclist stop and wait in difficult situations, while cars could go ahead at full speed.

The old roundabouts were designed for cars: cars could drive at high speeds and traffic on the roundabout had to give way to traffic entering the roundabout (as it came from the right). Cyclists had to give way to all other traffic. The first new, small roundabout was constructed near Venlo in the 80's. Traffic on this roundabout now had right of way over traffic coming on to the roundabout. Speed was also reduced to 30 km/hr. This type of roundabout appeared to be remarkably safe, and it had high capacity. This new type of roundabout spread rapidly over the country, and by now almost every community has such a roundabout.

TYPES OF ROUNDABOUTS

In general, there are 3 kinds of roundabouts used in the Netherlands:

- roundabouts without special facilities for bicycles
- roundabouts with the bicycle-lane on the roundabout itself
- roundabouts with a separate bicycle path around the roundabout.

The bicyclists have right of way over traffic entering the roundabout on the first two types. There has been considerable debate over the right of way for cyclists at the third type of roundabout during the last few years. We, a local work group of the cyclist union ENFB, wanted to participate in that discussion and for this purpose we held an enquiry.

ENQUIRY

There are three roundabouts in our community with a separate bicycle path. Two of these are frequently used by bicycles; the third is hardly used by cars or bicycles. Cyclists are allowed to use the bicycle path in both directions on all three roundabouts.

We held our enquiry at the two frequently used roundabouts. The traffic intensity is about 5000 (quietest roundabout at the first enquiry) to 8000 cars/day. We questioned cyclists at both roundabouts on a Saturday afternoon between 12.00 and 14.00 hours, and on a working day between 17.00 and 18.30 p.m. One roundabout is used by a lot of scholars whom we questioned between 14.45 and 16.30 p.m. Each time we questioned about twenty-five people, and in the end we had the opinion of 127 bicyclists. We asked every passing bicyclist to answer our questions and almost everyone responded. 63% Of those questioned were men and the age of the respondents was equally distributed over the ages: 14% were 60+ and the age-groups <20, 20-40 and 40-60 each made up about 28% of the respondents. This is a normal population of cyclists and 90% of the respondents used the roundabout at least once a week.

CONCLUSIONS OF THE FIRST ENQUIRY

The conclusions of the enquiry were as follows:

1. While traffic authorities and car drivers think of roundabouts as quick and safe, cyclists consider them as insufficient on these points.

2. Each respondent gave the roundabout a mark, (ranging from 1= bad, 6 = barely sufficient to 10=excellent) for safety, comfort and speed. They awarded the roundabouts marks of 6.1 for safety, 6.1 for comfort and 6.2 for speed (of bicycles). The % of dissatisfied responses were 29% for safety, 31% for comfort and 26% for speed.
3. This lack of safety exists because crossing the lanes is difficult. This can be seen on the photo. It is because:
 - cars that leave the roundabout are difficult to be seen by cyclists
 - one-third of the cars do not indicate when they will leave the roundabout
 - cyclists cannot predict easily if a car is going to leave the roundabout
 - the time that passes between the moment a car appears from behind the hill in the middle and the moment it crosses the bicycle path is shorter than the time a cyclist needs to cross the lane. This is especially so if there is no stop possible between the two lanes, if the bicyclist rides the path clockwise, or if he starts after stopping. One could start crossing a lane without a car in sight, and be surprised by one while crossing. during our enquiry the hill in the middle was substantially higher and broader as on the photo.

Photo 1 / subcript: Will the car leave the roundabout or can I cross? Maybe I could make it before the car is here?



4. On one of the

- roundabouts one of the lanes was hardly used by cars and cyclists tended to cross that lane without looking.
5. More than 50% of the respondents mentioned that they were sometimes given right of way. One third said that they sometimes took right of way and the reasons given for this were hurry, not feeling like stopping, feeling that they could make it, or daring to take the risk.
6. A few cyclists only dared to cross the roundabouts walking. Alas, in this way they increase their chance of a surprise-meeting with a car popping up from behind the hill in the middle.
7. Children are allowed by their parents to use the roundabout by themselves when they are about nine to ten years old.
8. A vast majority (70%) of the bicyclists said they would prefer roundabouts where cyclists have right of way.

CHANGES AND THE SECOND ENQUIRY

The right of way on these roundabouts was changed in favour of the bicyclists. The hill in the middle of the roundabouts was lowered a bit, to prevent surprise-meetings between cars and bicycles. The hill is still high enough to hide a car completely, only now it cannot hide it for very long. After these changes we repeated the enquiry. We enquired at the same times of the week as before and this time we questioned a total of 132 bicyclists. This time we questioned 58% of man and 42% of women. 26% were younger than 20, 41% was between 20 and 40, 22% was between 40 and 60 and 12% was 60 years or older. This is again

a normal population for bicyclists. 81% of the respondents used the roundabout at least once a week.

CONCLUSIONS OF THE SECOND ENQUIRY

The conclusions of this second enquiry were as follows:

1. An overwhelming majority of 97% of those questioned thought the new situation, with right of way for bicycles, better than the previous situation.
2. The marks for safety, comfort and speed changed considerably: their figure for safety rose from 6.1 to 6.9; for comfort from 6.1 to 7.2 and for speed (of bicycles) from 6.2 to 7.2. The % of dissatisfied responses dropped from 29 to 8% for safety, from 31 to 5% for comfort and from 26 to 5% for speed. From the five main demands for good bicycle routes, (safety, comfort, speed, logic layout and attractiveness), all three demands that concern roundabouts were considerably improved.
3. 90% Of the Cyclists who also use the roundabout as a car driver (half of the respondents), said they considered the new situation better for the car drivers as well. The situation is more understandable.
4. The situation is still not yet perfect. One in five respondents said that they usually don't get right of way from the cars. The number of near-accidents is not reduced to zero. Better roundabout design might help with red bicycle paths, zebra-crossings, etc. The roundabouts still differ from the new guidelines for roundabouts with bicycles in right of way.
5. Both roundabouts are outside built-up area, but not by much. The city-limit should be moved because of new guideline, so that the roundabouts are within the city-limits.
6. Giving bicycles right of way can be an effective measure to promote cycling: half of the respondents used the roundabout as a car-driver as well, and thus had a car at their disposal. They were now happier with the roundabout, and might choose their bike more often. Three quarters of the bicyclists questioned were aged above 20 years and might buy a car.
7. Children were allowed to use the roundabout by themselves when they were nine years old.

WHAT CAN WE LEARN FROM THIS ENQUIRY FOR OTHER ROUNDABOUTS?

Cyclists enjoy having right of way. For them, it is safer, more comfortable and quicker. First of all, stopping and starting a bicycle costs a lot of human energy. Second, if bicycles have right of way, the car-drivers have to watch out for cyclists. Cyclists will still watch out for cars, so now both drivers are alert. On roundabouts with separate bicycle paths bicycles can safely have right of way as shows this enquiry on two roundabouts where the right of way has changed. Cyclists have the opinion that having right of way is safer than not having right of way. Right of way for bicyclists on roundabouts could also be a tool towards a policy of reducing motor traffic in cities.

The design of the roundabout appeared to be of enormous importance. The bicycle paths on these roundabouts are 5 meters away from the car-lane, so cyclists have no time to judge whether a car will leave the roundabout or not. Many cars do not indicate so cyclists have to wait for cars that do not leave the roundabout. When they think a car won't leave the roundabout and it does, an (near)-accident will happen leaving the cyclist with shaking knees and bouncing heart. If bicycles have no right of way on a roundabout, the crossing of the bicycle path should be at least 10 meters away from the car lane. If there is insufficient space it is safer to give bicycles right of way.

With red bicycle paths (the standard-colour in the Netherlands) crossing the black car-lanes the right of way for bicycles can be visualised very clearly on the spot. Signs before the roundabout and the lining and marking on the roundabout itself must help to stress that bicycles have right of way. Experiences at a new roundabout (finished after the second enquiry) in our village makes this clear: with zebra-crossings for pedestrians the car drivers stop more readily for bicycles. Bicycle paths at one of the investigated roundabouts have now been marked with red asphalt, and this has even more improved the situation there as well. Vegetation between the bicycle path and the roundabout should be kept very low.



Photo 2
/

subscript: I hear brakes. Eyecontact. I go!

If bicyclists are allowed to use the roundabout in both directions there is an increased risk of accidents with cars going to the roundabouts. The car drivers tend to only look on their left. The crossing of the bicycle path should make very clear that bicycle traffic can come from both sides. The bicycle path could be laid a tiny bit higher, as a threshold. The blocks marking the crossing should stress that it is a very broad bicycle path, and thus be placed outside the bicycle path itself. The middle-line of the bicycle path should be pulled through over the crossing, and additional arrows on the bicycle crossing can make it clear for any car driver that bicycles can come from both directions.

With the first enquiry we asked whether or not bicyclists should have right of way on roundabouts. Many people spontaneously said that whatever the outcome, it should be the same for all roundabouts. Uniformity is important. The outcome of the discussion in the Netherlands, right of way inside built-up areas, no right of way outside it, is a step in the right direction, but is not a solution that the vast majority of bicyclist (almost 100% of the Dutch) would choose. As many people do not know the difference between a bicycle path and a bicycle lane, it is advisable to give bicycles right of way on all three kinds of roundabouts. The speed on a roundabout is reduced to 30 km/hour, that is low enough to stop, be it for a car or for a bike. If traffic is so intense that right of way for cyclists is not possible one should consider split-level crossings. If bicycles have no right of way, it is possible that the opinion will tend to be that bicycles are an inferior kind of traffic. If bicycles have right of way car-drivers will explicitly have to watch out for them and stop for them. The strong minding the weak. This has a civilising effect on traffic, lasting beyond the roundabout.

THE COMPATIBILITY OF CYCLING AND INLINE SKATING

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THE COMPATIBILITY OF CYCLING AND INLINE SKATING

The main aim of the research was to analyse the behaviour of inline skaters, their competence and knowledge (of traffic regulations etc.) and any possible problems they might have with other road users, in order to be able to draw out recommendations for accident prevention.

Accordingly, observations were made of skating speeds, space requirements, breaking distances and stopping distances. Further relevant data was obtained using surveys, census of skaters and observations of encounters between inline skaters and pedestrians or cyclists.

There are considerable differences between skaters as a result of different levels of skating expertise. It is practical, therefore, to give skaters a free choice between travelling slowly in areas used by pedestrians, or travelling at speed on cycling paths and lanes.

VERTRÄGLICHKEIT VON RADFAHREN UND INLINE-SKATING

Ziel der Untersuchungen war es, das Verhalten und das Wissen der Inline-Skater sowie eventuelle Probleme mit anderen Verkehrsteilnehmern im Straßenverkehr zu analysieren und daraus Maßnahmen zur Unfallvermeidung abzuleiten.

Diesbezüglich wurden Messungen zu Geschwindigkeit, dem Breitenbedarf, dem Brems- und Anhalteweg der Inline-Skater durchgeführt. Ergänzt wurden diese Daten durch Befragungen, Zählungen sowie Interaktionsbeobachtungen.

Wesentliche Unterschiede ergeben sich durch das inhomogene Fahrkönnen der Skater. Aus diesem Grund ist es zweckmäßig dem Skater die Wahlmöglichkeit zwischen einem langsamen Fortbewegen auf Verkehrsflächen für den Fußgängerverkehr bzw. einem schnelleren Fortbewegen auf Radfahranlagen einzuräumen. Eine Aufhebung der Benützungspflicht von Radwegen für Radfahrer wird zu homogenen Geschwindigkeiten führen und somit die Unfallgefahr vermindern.

ZDRUŽLJIVOST KOLESARJENJA IN ROLKANJA

Glavni cilj raziskave je bila analiza obnašanja rolkarjev, njihovo znanje (prometni predpisi...) in možni problemi, ki jih imajo z ostalimi udeleženci v prometu, z namenom, da bi pripravili priporočila za preprečitev nesreč.

Opazovali smo hitrosti rolkarjev, potreben prostor ter njihove zavorne in ustavljajne razdalje. Podatke smo dopolnili s pomočjo anket, štetja prometa in opazovanja odnosov med rolkarji ter pešci in kolesarji.

Med rolkarji smo opazili razlike, ki so odvisne od njihovega rolkarskega znanja. Iz tega sledi, da bi bilo smotrno dati rolkarjem na izbiro uporabo pločnikov (za počasnejšo vožnjo) in kolesarskih poti (za hitrejšo vožnjo).

VERTRÄGLICHKEIT VON RADFAHREN UND INLINE-SKATING

Inline-Skating nur als Freizeitbetätigung oder Sport zu sehen, ist etwas zu kurz gegriffen. Inline-Skater benützen - ob in der Freizeit oder nicht - vielfach öffentliche Verkehrsflächen. Damit stellen sie andere Verkehrsteilnehmer - und auch den Gesetzgeber - vor eine neuartige Situation und vor neue Probleme. Das vorrangige Ziel einer vom Kuratorium für Verkehrssicherheit erstellten Studie (Robatsch K., Schrammel E., Kräutler Ch., Passath G. - Wien, 1996) ist es, das Verhalten der Inline-Skater sowie eventuelle Probleme mit anderen Verkehrsteilnehmern im Straßenverkehr zu analysieren.

Neben der Erhebung technischer Daten (Geschwindigkeit, Breitenbedarf, Bremsweg etc.) werden Einflußfaktoren - wie z.B. das Verhalten im Straßenverkehr samt den Interaktionen mit Fußgängern und Radfahrern beobachtet oder das Image der Inline-Skater über Befragungen ermittelt. Auf Basis der Ergebnisse werden Maßnahmen zur Unfallverhütung und Verkehrssicherheit, sowie zur Verkehrsplanung und -organisation diskutiert.

Aufgrund der Ergebnisse sollen insbesondere Fragen beantwortet werden, wie z.B.: Welche Verkehrsflächen sollen Inline-Skater benützen dürfen? Welche Mindestbreiten sind für die Befahrbarkeit durch Inline-Skater notwendig? Welche Geschwindigkeiten können Inline-Skater erreichen und welchen Bremsweg benötigen sie im Vergleich zu anderen Verkehrsmitteln?

Als Grundlage für die Untersuchung dienten:

- 1.700 Messungen zu Geschwindigkeit, Breitenbedarf, Bremsweg in einer Inline Skating Halle
- Repräsentative, österreichweite Telefonumfrage (n = 1000 Personen ab 14 Jahre)
- Intensivbefragung unter 105 Inline-Skatern in Wien mittels Fragebogen
- Erhebung der Tragequoten von Schutzausrüstung mittels Beobachtungsbogen in Wien
- Zählungen von Inline-Skatern, Fußgängern und Radfahrern an 10 ausgewählten Stellen in Wien
- Verhaltensbeobachtungen (Interaktionen, Konflikte) an denselben 10 Stellen in Wien

1. ERGEBNISSE DER MESSUNGEN VON INLINE SKATERN

1.1. Geschwindigkeitsunterschiede und Platzbedarf

Die Messungen zeigen, daß Höchstgeschwindigkeiten von mehr als 25 km/h selbst gute Inline-Skater nur selten überschreiten. Lediglich 1 % der getesteten Skater konnte eine Geschwindigkeit von mehr als 30 km/h erzielen. Anfänger bewegen sich mit einem Tempo von rund 12 km/h, mittelmäßige bis gute Skater rollen durchschnittlich mit rund 16 km/h und sehr gute Skater erreichen durchschnittliche Geschwindigkeiten knapp über 20 km/h. Kinder unter 12 Jahren sind im Schnitt mit 10 - 12 km/h unterwegs.

Die Untersuchungsergebnisse zeigen, daß das Alter bzw. das Geschlecht kaum Auswirkungen auf die verschiedenen Parameter hat. Hingegen hat das Fahrkönnen und die Fahrpraxis signifikante Auswirkungen auf das Geschwindigkeitsniveau und den Bremsweg. Deshalb werden die einzelnen Ergebnisse nach Gruppen dargestellt, die das Fahrkönnen widerspiegeln (Anfänger bis sehr gute Skater). Kinder unter zwölf Jahren wurden gesondert gemessen und analysiert, da sie in Analogie zum Radverkehr nicht unbeaufsichtigt im Straßenverkehr mitfahren dürfen.

Mittlere und durchschnittliche Geschwindigkeit von Inline-Skatern in km/h nach der Fahrpraxis bzw. dem Fahrkönnen

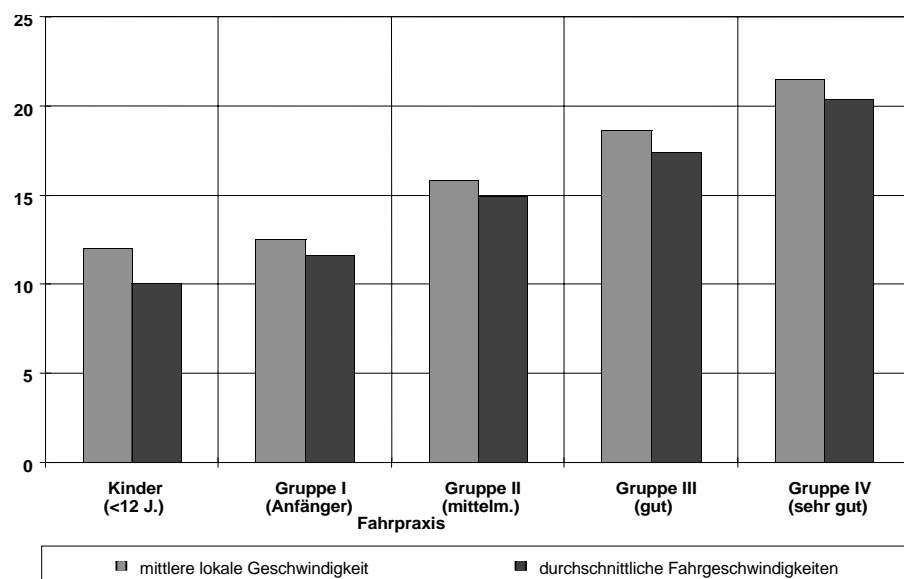


Abb.1

Die

530

Durchschnittsgeschwindigkeit von Inline-Skatern ist um

rund 2 -5 km/h niedriger als die von Radfahrern. Messungen zeigen, daß 85 % der Inline-Skater bei mittlerer Geschwindigkeit einen Breitenbedarf des Bewegungsraumes und eine Spurbreite von 1,3 m benötigen, um sicher und unbehindert fahren zu können.

1.2. Vergleich von Spurbreiten und Breitenverteilung des Bewegungsraumes in cm (auf ebener, gerader Strecke)

		50 %-Breite in cm	85 %-Breite in cm
Breitenverteilung des Bewegungsraumes			
<i>Fußgänger</i>		82	101
<i>Radfahrer</i>		97	124
<i>Inline-Skater</i>	bei mittlerer Geschwindigkeit	119	130
	bei niedriger Geschwindigkeit	129	141
	bei hoher Geschwindigkeit	142	154
Spurbreite			
<i>Inline-Skater</i>	bei mittlerer Geschwindigkeit	120	129
	bei niedriger Geschwindigkeit	116	125
	bei hoher Geschwindigkeit	126	145

Bewegungsraum von Fußgängern und Radfahrern laut Schopf, 1985 und Kontrollmessungen im Rahmen der Studie „Inline Skating“, 1996

Tab. 1

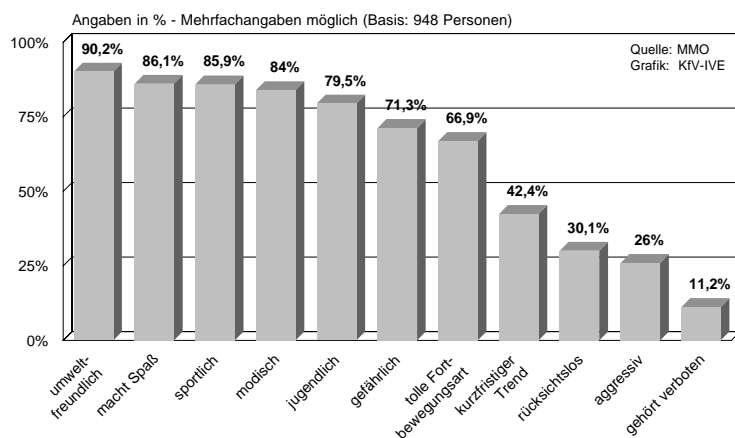
1.3. Bremsen und Reaktionszeit

Die optimale Bremsmethode ist stark abhängig vom Fahrkönnen, vom technischen Stand der Schuhe und vom Fahrbelag. Ungeübte Skater sollten - bevor sie sich mit den Skates in den Straßenraum begeben - das Bremsen besonders üben: Denn die Statistik zeigt, daß Skaterverletzungen großteils auf unprofessionelle Bremstechniken zurückzuführen sind.

2. IMAGE DES INLINE-SKATINGS

Dem Inline-Skating wird von den Österreichern ein positives Image zugeschrieben. Eigenschaften, wie "umweltfreundlich" (90%), "sportlich" (86%), "macht Spaß" (86%), "modisch" (84%) oder "jugendlich" (80%) werden mit dem Image des Inline-Skatens weit häufiger verbunden als negative Eigenschaften. Zwar halten es 71% für "gefährlich", aber die Attribute "rücksichtslos" (30%) oder aggressiv (26%) rangieren ganz hinten in der Image-Wertung.

Image des Inline-Skatings



3. VERHALTEN IM

STRAßENVERKEHR

3.1. Persönliche Erfahrungen mit Inline-Skatern

Bei der Repräsentativerhebung wurden die Österreicher nach ihren persönlichen Erfahrungen mit Inline-Skatern im Straßenverkehr befragt und ihren Erfahrungen mit Radfahrern gegenübergestellt:

Tabelle 2: Persönliche Erfahrungen mit Inline-Skatern und Radfahrern

persönliche Erfahrungen	mit Inline-Skatern	mit Radfahrern
positiv	19.1%	34.6%
negativ	14.7%	22.2%
neutral	42.6%	40.5%
keine, weiß nicht	23.6%	2.7%

3.2. Interaktionen der Inline-Skater mit anderen Verkehrsteilnehmern

Die Interaktionsbeobachtungen an 10 Stellen in Wien wurden von geschulten Beobachtern zu unterschiedlichen Tageszeiten und Wochentagen durchgeführt. "Interaktion wird als das mehr oder weniger aufeinander abgestimmte Verhalten zweier oder mehrerer Individuen angesehen, wobei das Agieren jedes einzelnen Individuums eine zu berücksichtigende Voraussetzung für das Agieren der anderen darstellt (Risser et al., 1991)." Insgesamt wurden 547 solcher Interaktionen von Inline-Skatern mit anderen Verkehrsteilnehmern mittels eines Beobachtungsbogens aufgezeichnet. Wie in Tabelle 3 dargestellt, war der Großteil der Interaktionspartner Fußgänger (57%) sowie Radfahrer (35%).

Tabelle 3: Interaktionspartner der Inline-Skater

	absolut	%
Fußgänger	311	56.9%
Radfahrer	189	34.6%
andere Inline-Skater	44	8.0%
Sonstige	3	0.5%
Insgesamt	547	100.0%

Der Großteil der beobachteten Interaktionen (42%) fand auf sogenannten Mischflächen meist auf der Wiener Donauinsel statt. Weitere 28% der an Interaktionen beteiligten Inline-Skater bewegten sich hauptsächlich auf Fußgängerflächen (inklusive Schutzwege). 30% hielten sich auf Radfahranlagen (inklusive Radfahrerüberfahrten) auf

Bei der Gesamtbeurteilung der Interaktion erfolgte u.a. eine Einstufung nach Konfliktgraden in Anlehnung an das Handbuch zur Erhebung von Verkehrskonflikten (Risser et al., 1991).

Folgende Verteilung der Interaktionsformen wurde dabei zwischen Inline-Skatern und anderen Verkehrsteilnehmern festgestellt: Problemlose Passagen (23%) und konfliktfreie Interaktionen (52%) waren vorherrschend. Schwere Verkehrskonflikte oder gar Kollisionen waren selten der Fall (vgl. Tabelle 4).

Tabelle 4: Form der Interaktion nach Konfliktgrad

	absolut	
problemlose Passage	126	
konfliktfreie Interaktion	282	
leichter - mittlerer Verkehrskonflikt	125	
schwerer Verkehrskonflikt, Beinahe-Unfall	11	
Kollision	3	
insgesamt	547	

- Rund 75% der Interaktionen wurden als problemlose Passagen bzw. konfliktfreie Interaktionen eingestuft.

- 23% der Interaktionen wurden als leichter bis mittlerer Verkehrskonflikt bewertet. Oft geht solch einem Konflikt ein fehlerhaftes Verhalten zumindest eines Verkehrsteilnehmers vor-aus - z.B. kritisches Normalverhalten (Geschwindigkeit, Abstand) oder Regelver-stöße. Zur Kollisionsvermeidung ist ein kontrolliertes Manö-ver zumindest eines Beteiligten not-wendig.
- Schwere Verkehrskonflikte wurden bei 2% der Interaktionen beobachtet. Sie sind da-durch gekennzeichnet, daß die "evasive action" spät erfolgt. Sie muß daher sehr rasch und sehr konsequent durchgeführt werden, um einen Unfall oder eine Kollision zu ver-meiden (Notmanöver). Bei den hier beobachteten schweren Konflikten gerieten 4 Skater und 2 Interaktionspartner ins Schleudern oder in Sturzgefahr.
- 3 der 547 Interaktionen (0.5%) führten zu Kollisionen. Offensichtliche Verletzungsfolgen waren dabei nicht zu erkennen. (Auch bei 2 weiteren Einzelstürzen kam es zu keinen Ver-letzungen.)

4. SCHLUßBEMERKUNGEN

Die Vermutung, daß durch Inline-Skater auf Radfahranlagen mehr Konflikte entstehen, konnte in der vorliegenden Untersuchung nicht bestätigt werden. Bei Interaktionsbeobach-tungen an 10 ausgewählten Stellen in Wien wurde festgestellt, daß sich die Interaktionen der Inline-Skater mit Radfahrern im Konfliktpotential nicht von den Interaktionen der Inline-Skater mit Fußgängern unterscheiden. Die Formen der Inter-aktion (problemlose Passage, kon-fliktfreie Interaktion, Konflikt) waren auch unab-hängig davon, ob sich die Inline-Skater auf Fußgängerflächen, Radfahranlagen oder Mischflächen aufhielten. Das größte Konflikt-potential bei Interaktionen mit Inline-Skatern lag im Querverkehr (unabhängig von Ver-kehrs-fläche und Interaktionspartner).

Insgesamt gesehen wurden bei den Interaktionen der Inline-Skater mit Fußgängern, Rad-fahrern und anderen Inline-Skatern relativ wenig schwere Konflikte (2.0% aller beobachte-ten Interaktionen) und kaum Kollis-sionen (0.5%) registriert. Verletzungsfolgen waren dabei keine zu erkennen. Der An-teil der schweren Verkehrskon-flikte und Kollisionen an den Ver-kehrskonflikten insge-samt beträgt 10%. Vergleiche mit anderen Untersuchungen gestalten sich schwierig, da die Kon-fliktdefinition z.T. unter-schiedlich ge-handhabt wird und auch die Auswahl der Erhe-bungs-stellen eine wesentliche Rolle spielt. Als ungefäh-er Vergleichswert kann vielleicht eine Kon-fliktuntersuchung zwi-schen Radfah-rern und Fußgängern an 6 Stellen in Wien herange-zogen werden (Risser et al., 1992): Der Anteil der schweren Ver-kehrskonflikte an den Konflikten insge-samt betrug dabei 36%. Kollis-sionen wurden aller-dings keine beobach-tet.

Die Gefahren für Inline-Skater im Straßenverkehr werden seitens der öster-reichischen Be-völkerung - im Vergleich zu anderen Verkehrsteilnehmern - als gering eingestuft. Als am meisten gefährdete Gruppen werden Fußgänger (54%) und Radfahrer (30%) genannt. Diese Ansicht deckt sich mit Hochrechnungen aus Verletzungsdaten von Inline-Skatern, die in Spitälern behandelt wurden: 85% aller Verlet-zungen passieren bei Einzelstürzen. Nur 4% der Verletzungen werden durch Kollisionen mit Fußgängern oder Radfahrern verursacht (Institut "Sicher Leben", 1997). Diese Verletzungsdaten lassen u.a. Forderungen nach einer Verbesserung des Eigenschutzes aufkommen. Lediglich 27% der Inline-Skater sind mit einer adäquaten Schutzausrüstung ausgestattet. Mehr als ein L der Skater verwendet überhaupt keinen Schutz und fast die Hälfte eine mehr oder weniger mangelhafte Aus-rüstung.

Wesentliche Unterschiede beim Geschwindigkeitsniveau, dem Bremsweg und dem Breitenbedarf ergeben sich durch das inhomogene Fahrkönnen der Skater. Aus diesem Grund ist es zweckmäßig dem Skater die Wahlmöglichkeit zwischen einem langsamen Fortbewegen auf Verkehrsflächen für den Fußgängerverkehr bzw. einem schnelleren Fortbewegen auf Radfahranlagen einzuräumen. Diese Unterscheidung ist deshalb zu befürworten, da langsame Radfahrer ein annähernd gleiches Geschwindigkeitsniveau wie geübte Inline-Skater aufweisen.

Die Meßergebnisse zeigen, daß die Freigabe von Radfahranlagen im Ortsgebiet und die Freigabe von Radwegen, gemischten Geh- und Radwegen sowie Radfahrerüberfahrten im Zuge von Radwegen und gemischten Geh- und Radwegen im Freilandbereich sinnvoll ist. Flächen für den Fußgängerverkehr sollen den Rollschuhläufern weiterhin offen stehen, wobei die Rücksichtnahme gegenüber den Fußgängern oberstes Gebot sein muß.

Eine gleichzeitige Aufhebung der gesetzlich verankerten Benützungspflicht von Radwegen für Radfahrer würde zu homogenen Geschwindigkeiten führen und somit die Unfallgefahr vermindern. Aufgrund des benötigten Breitenbedarfs von Radfahrern und Inline-Skatern resultiert die Forderung, Radfahranlagen in Zukunft zumindest 1,25 m (besser 1,50 m) breit auszuführen.

Zusätzliche Maßnahmen aus Sicht der Inline-Skater:

Im Rahmen der Intensivbefragung wurden von den Inline-Skatern folgende für den Straßenverkehr relevante Themen angeschnitten – diese Antworten sind im Gegensatz zur Repräsentativ-erhebung großteils offenen Fragen (ohne vorgegebene Antwortkategorien) entnommen:

- Eine eindeutige Rechtssituation ist zu schaffen. Nicht nur die Benützung von Verkehrsflächen (Öffnung der Radfahranlagen), sondern auch die Benützung von öffentlichen Verkehrsmitteln und eventuelle Altersgrenzen für Kinder sind davon betroffen. Das gesetzlich verpflichtende Tragen einer adäquaten Schutzausrüstung halten Inline-Skater in Wien für diskussionswürdig, eine Geschwindigkeitsbegrenzung auf Fußgängerflächen hingegen wird eher abgelehnt.
- Unsicherheit herrscht auch hinsichtlich des Umgangs mit anderen Verkehrsteilnehmern. Unvorhersehbare Reaktionen und versuchte Ausweichmanöver vor allem der Fußgänger tragen eher zur Eskalation als zur Lösung der Situation bei. Klare Verhaltensrichtlinien auch für Skater tun not.
- Die Oberflächenbeschaffenheit wird z.T. kritisiert. Bauliche Maßnahmen (Kopfsteinpflaster, Betongitter) an überraschenden Stellen z.B. auf der Donauinsel und auf Radwegen werden als „Skater-Fallen“ bezeichnet. Weitere Gefahren sind raue Oberflächen oder Rollsplitt.
- Die anderen Verkehrsteilnehmer nehmen nach Meinung der Skater zu wenig Rücksicht. Mehr Toleranz und Aufklärungsarbeit wird deshalb gefordert.
- Einige Inline-Skater wünschen sich eine (bessere) Ausbildung: Fahrtechnik – wie Kurvenfahren oder Bremsen – sowie Verhaltensrichtlinien für Skater sind dabei gefragt.

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THE USE OF BICYCLE INFRASTRUCTURE BY INLINE-SKATERS

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ENGLISH

THE USE OF BICYCLE INFRASTRUCTURE BY INLINE-SKATERS

Inline-skating is popular in Austria. The Austrian traffic regulations have been altered to allow inline-skaters the use of the infrastructure for cyclists. It is worth some consideration whether this is a favourable solution or not because characteristics of and requirements for inline-skaters differ from those of/for cyclists.

This paper shows that inline-skaters are distinctively slower than cyclists, that their width requirements are double and their braking distances are twice as long. This results in high demand for infrastructure, which cannot be met with the existing bicycle networks.

If the demand of inline-skaters for high-quality infrastructure can be met, cyclists will welcome skaters on cycle paths and lanes as they also will profit from improved infrastructure. Under the given circumstances, where most cycling infrastructure is not even convenient for cyclists, admitting inline-skating on cycling infrastructure will prove hazardous.

DEUTSCH

DIE MITBENUTZUNG DER RADFAHRANLAGEN DURCH INLINE-SKATER

Inline-Skaten ist in Österreich ziemlich populär geworden. Die Österreichische StVO wurde in der 20. Novelle dahingehend geändert, daß nun den Inline-Skatern auch die Radfahranlagen offen steht. Es ist einige Überlegungen wert, ob dies eine glückliche Lösung darstellt, da sich Charakteristika und Bedürfnisse der Inline-Skater deutlich von jenen der Radfahrer unterscheiden.

Dieser Beitrag zeigt, daß Inline-Skater deutlich langsamer als Radfahrende sind. Dazu kommen doppelter Breitenbedarf und zweifache Länge des Bremsweges. Die daraus resultierenden hohen Ansprüche an die Verkehrsinfrastruktur können mit den existierenden Radfahranlagen in Österreich nicht befriedigt werden.

Wenn die Ansprüche der Inline-Skater nach qualitativ hochwertiger Infrastruktur erfüllt werden können, werden die Radfahrenden Inline-Skater auf Radwegen und Radfahrstreifen akzeptieren, weil sie von einer verbesserten Infrastruktur auch profitieren würden. Unter den derzeitigen Gegebenheiten, wo ein Großteil der Radfahranlagen sogar für Radfahrende nicht gut geeignet ist, muß die Benutzungserlaubnis der Radfahranlagen durch Inline-Skater als sehr problematisch angesehen werden.

SLOVENSKO

UPORABA KOLESARSKE INFRASTRUKTURA ZA ROLKARJE

Rolkanje je v Avstriji zelo popularno. Avstrijski prometni predpisi so bili spremenjeni in sedaj dovoljujejo rolkarjem uporabo kolesarske infrastrukture. Vredno je razmisliti, ali je to ugodna rešitev ali ne, saj se značilnosti in potrebe pešcev in kolesarjev razlikujejo od tistih, ki veljajo za rolkarje.

Kolo velja za idealno prevozno sredstvo za kratke razdalje, pa vendar kolesarji težko najdejo primerno infrastrukturo. Če se lahko zadovoljijo potrebe rolkarjev po visoko kvalitetni infrastrukturi, bodo tudi kolesarji pozdravili rolkarje na kolesarskih stezah, saj bodo od izboljšane infrastrukture prav tako imeli koristi. Pod danimi okoliščinami, kjer mnoga kolesarska infrastruktura ni primerna niti za kolesarje, pa se bo dopuščanje rolkanja po kolesarskih stezah izkazalo za nevarno.

FRIDAY

THE USE OF BICYCLE INFRASTRUCTURE BY INLINE-SKATERS

1 INTRODUCTION (CURRENT SITUATION)

There are 6.5 million bicycles in 3 million Austrian households, 500.000 are sold each year, and 2.5 million people use a bike at least a few times a week. Cycling is considered the ideal transport mode for short distances. Yet after two decades of cycling policy in this country, cyclists can hardly find acceptable infrastructure.

In the past years inline-skating has become a popular outdoor activity in Austria. Compared to cyclists, the number of active inline-skaters (estimated 600.000) is rather small. It is an open question whether inline-skating can become an alternative transport mode and if inline-skating on the existing cycling infrastructure is a sensible solution.

Before 1998, inline-skaters were only allowed to frequent sidewalks and other areas for pedestrians and children. Many skaters frequented cyclists' infrastructure illegally. In reaction to this situation, the Austrian traffic regulations were altered in July 1998 to allow inline-skaters the use of all bicycle infrastructure except cycle lanes outside built-up areas.

It is worth considering whether this is a favourable solution or not.

2 PEDESTRIANS, CYCLISTS AND INLINE-SKATERS - A COMPARISON OF SPEEDS, WIDTH REQUIREMENTS AND STOPPING-DISTANCES

Pedestrians, cyclists and inline-skaters have different characteristics and requirements.

2.1 DRIVING SPEEDS

Different research projects found different driving speeds for the two "wheeled" modes so that looking into the measurement techniques was necessary to be able to compare them.

Table 1: Comparison of speeds (inline-skaters and cyclists) from two studies that used remote measurement technique

	inline-skaters (Markouschek 1998)	cyclists (Botma, Papendrecht 1991)	difference [km/h]	difference [%]
50% speed [km/h]	12	18.9 - 24.9	6.9 - 12.9	58 - 108
85% speed [km/h]	15	21.4 - 28.4	6.4 - 13.4	43 - 89

Table 1 shows that the

differences in speeds of inline-skaters and cyclists are about 43 to 108% (6.4 to 13.4 km/h). Speeds of children are distinctively lower, maximum speeds of racing-cyclists are considerably higher - this leads to the conclusion that cyclists usually have to overtake inline-skaters when they want to retain their normal driving speed.

2.2 REQUIRED LANE WIDTH AND INFRASTRUCTURE FOR INLINE-SKATERS SHARED WITH OTHER MODES

The width of the traffic infrastructure is essential because cycle-paths that are too narrow cause problems in encounters between skater and cyclist when sufficient space for overtaking manoeuvres is not provided.

Table 2: Widths that pedestrians, cyclists and inline-skaters actually require in "one-way traffic" (different authors) - additional lateral clearance is NOT included.

mode:	pedestrian	cyclist	inline-skater	difference cyclist - skater	
	[cm]	[cm]	[cm]	[cm]	[%]
50% width	68.5	65	117-168	+52 - 103	+80 - 158
85% width	78.5	66	130-154	+64 - 88	+97 - 133
maximum	150	90	170-190	+80 - 100	+89 - 111

Table 2 shows that inline-skaters need more

than twice the width of cyclists or pedestrians. What consequences does that have for the dimensions of shared infrastructure?

Of course, inline-skaters can use much narrower lanes over short distances than shown in Table 2 when they have no choice. This happens when they approach an obstacle, so the encounter with oncoming traffic - be it a cyclist or a pedestrian - can be assumed as unproblematic. It should not be forgotten, though, that inline-skaters are not able to accelerate under these

conditions (dense counter-flowing traffic on narrow paths).

Of great concern are encounters with representatives of the two other modes in one direction where pedestrians have problems with the two other modes and cyclists with inline-skaters as the latter tend to use all the available space and are difficult to overtake.

In one way traffic the required widths as shown in Table 2 should be combined. Usually the 85% values are considered sufficient. Of course, the additional safety clearance has to be added. This means:

A) For cyclists and pedestrians:

$0.66\text{m} + 0.79\text{m} = 1.45\text{m}$. With the addition of safety clearances for each mode ($2 \times 0.40\text{m}$) and towards car traffic or other lateral dangers and obstacles (0.70) most traffic guidelines recommend minimum cross-section widths for combined cyclist-pedestrian facilities of 3.0m to 3.5m (2.5m wide narrowings are only allowed for short stretches).

B) For cyclists and inline-skaters:

$0.66\text{m} + 1.50\text{m} = 2.16\text{m}$. With the addition of safety clearances of 1.50m (see above) we have a width of 3.70m and more.

Cycling infrastructure in Austria tends to be narrow even for cyclists and is therefore extremely narrow for inline-skaters, let alone for the combination of both modes. In addition the speeds of these two modes are rather different and so cyclist overtaking skater is the typical situation. It is therefore not valid to argue that a section of cycle-infrastructure is sufficient for a single inline-skater.

2.3 BRAKING AND STOPPING DISTANCES

Table 3: Comparison of the braking distances cyclists - inline-skaters at different speeds (different authors)

<div style="display: inline-block; transform: rotate(-45deg);"> Author and distance [m] </div> <div style="display: inline-block; transform: rotate(45deg);"> speed [km/h] </div>	Cyclists	Inline-skaters
	KfV 1996 (Radicke 1952) braking distances	Wininger 1999 provisional data braking distances
10	1.2	3
14	1.8	5
18	2.2	6.5
20	2.6	7.5
28	---	11

Table 3 shows different distances from two authors. Braking distances of skaters are twice as long as cyclists'.

Other interesting aspects are (Wininger 1999):

- about 5.7% of the braking-attempts ended with a fall, another 7% drove out of the recording field of the video-camera.
- quite a number of skaters stated that they did not know how to brake
- the price for shorter braking distances is a greater width requirement (e.g. stop-turn).
- pedestrians can jump out of the way, inline-skaters are able to swerve in full speed to avoid a collision, whereas cyclists are not that flexible and have to rely on their brakes.

2.4 OTHER SPECIFIC REQUIREMENTS AND CHARACTERISTICS OF INLINE - SKATERS

Inline-skaters need the following prerequisites for skating:

- smooth, clean surfaces without ruts and litter. This demands permanent maintenance.
- good weather (ice, snow and even rain cause problems) as wet surfaces are avoided

Inline-skaters have the following characteristics:

- transport capacity is small

- accident patterns and injury risks are scarcely known (every year 700 inline-skaters have to be treated in hospitals after a bad fall). Inline-skaters have not yet been included and reported in the Austrian traffic safety statistics.
- their equipment is not regulated (lights, brakes, beepers etc.)

3. CONCLUSIONS

Is inline-skating a mode of transport or just another outdoor sports-activity for the summer season similar to roller-skating and skate-boarding ?

The differences between inline-skaters and cyclists have been shown in this paper. The different acceleration and movement patterns of inline-skaters result in:

- slower movements: Inline-skaters have only half or two thirds of the speed of cyclists
- much greater width requirement: more than twice the lateral space is needed compared with cyclists, so adequate infrastructure, where both modes can drive easily, requires widths of 3.7 m
- braking distances of inline-skaters are longer than those of cyclists, which has consequences on traffic safety and infrastructure planning

To become a long-standing transport mode for all seasons

- inline-skating would have to be more or less independent of weather and road surface conditions and
- there should be sufficient space for the movements of skaters and possibilities to overtake, especially where cyclists are involved.

The future will show if it is possible to comply with the demands of inline-skaters by constructing proper infrastructure. This is rather doubtful as it takes long to realise good cycling infrastructure which is less demanding than good infrastructure for inline-skaters. Who will spend lots of money on a summer leisuretime mode of transport? And - what will happen, if cyclists, who are said by some organisations to be very similar to inline-skaters in many aspects, demand the same rights, e.g. the right to use all infrastructure for pedestrians?

If the demand of inline-skaters for high-quality infrastructure can be met, cyclists will welcome skaters on wide cycle paths and lanes as they will also profit from improved infrastructure. Under the given circumstances, where most cycling infrastructure is not even convenient for cyclists and will not improve in the near future, admitting inline-skating on cycling infrastructure will prove hazardous.

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ARE CYCLISTS DANGEROUS FOR BLIND AND VISION IMPAIRED PEOPLE?

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ENGLISH

CYCLISTS - A THREAT TO THE BLIND AND VISUALLY IMPAIRED?

Blind people are not against cyclists. Quite on the contrary, cycling (tandem) is very popular as a recreational sport. However, the fact that the bicycle emits hardly any noise at all, which is certainly an advantage from an environmental point of view, makes the cyclist a problematic road user for the blind because they find it nearly impossible to acoustically register an approaching cyclist. Cyclists on separate cycle paths or lanes cause few problems for (blind or visually impaired) pedestrians because confrontations are limited to crossroads where the pedestrian should always be given right of way. The most significant problems are encountered by blind and visually impaired road users where bicycle routes are located next to and at the same level as the sidewalk or where mixed bicycle routes/sidewalks exist because fast cyclists are considered a potential danger of accident. The consequence of such infrastructural facilities is an ever increasing, largely self-inflicted restriction of mobility on the part of the blind and visually impaired even in familiar

DEUTSCH

RADFAHRERLNNEN - EINE GEFAHR FÜR BLINDE UND SEHBEHINDERTE MENSCHEN (?)

Blinde Menschen lehnen Radfahrer nicht ab. Radfahren (fandem) wird im Gegenteil als Ausgleichssport hoch angesehen. Der umweltfreundliche Vorteil des Fahrrades, sehr leise zu sein, läßt RadfahrerInnen für blinde Menschen jedoch als schwierige Verkehrsteilnehmer erscheinen, da sie akustisch kaum wahrzunehmen sind. Die getrennte Führung von RadfahrerInnen auf eigenen Radwegen oder Radfahrstreifen bereitet (blinden und sehbehinderten) Fußgängern die geringsten Probleme, da es nur bei Querungen zu Konfrontationen kommen kann, wobei dann immer den Fußgängern der Vorrang zu geben ist. Die größten Schwierigkeiten für blinde und sehbehinderte Verkehrsteilnehmer tritt bei niveaugleichen Radwegen neben Gehwegen und bei gemischten Geh- und Radwegwn auf, da die schnell fahrenden Radfahrer als potentielle Unfallgefahr angesehen werden. Die Folge derartiger Anlagen ist eine ständig, steigende weitgehendst stelbstauferlegte Mobilitätseinschränkung blinder und sehbehinderter Menschen auch in für sie gut bekannten Umgebungen.

SLOVENSKO

KOLESARJENJE - NEVARNOST ZA SLEPE IN SLABOVIDNE LJUDI?

Tudi slepi ljudje ne odklanjajo kolesarjenja. Kolesarjenje (tandem) uživa visok ugled, kot izravnalni šport. Okoljuprijazna prednost kolesarjenja, da je zelo tiho, pa predstavlja za slepe in slabovidne ljudi problem, saj so kolesarji za njih akustično komaj zaznavni. Ločeno vodenje kolesarjev po kolesarskih stezah predstavlja za slepe in slabovidne pešce še najmanjši problem, saj lahko prihaja do konfrontacij le pri prečkanju kolesarskih poti, kjer pa morajo imeti prednost pešci. Največji problem za slepe in slabovidne udeležence v prometu se pojavlja pri izenačevanju nivojev med kolesarsko stezo in pločnikom ter na krajih, kjer sta kolesarska steza in pločnik združena, saj kolesarji, ki vozijo hitro, predstavljajo potencialno nevarnost za nesrečo. Posledica takšnih konstrukcij je nenehno naraščajoče omejevanje gibanja slepih in slabovidnih ljudi, tudi v njim dobro znanih okoljih.

FRIDAY

ARE CYCLISTS DANGEROUS FOR BLIND AND VISION IMPAIRED PEOPLE?

Blind and vision impaired people (VIP) do not reject cyclists. On the contrary there are a lot of actions by blind and vision impaired people, which are connected with the bicycle (Tandem).

The advantage, that bicycles are not harmful to the environment is simultaneous the most disadvantage, because they are extremely quiet and blind people are not able to hear them.

A separate cycle track is the best result for blind and vision impaired pedestrians and prepares less problems to them.

The mixed principle consists of two different groups:

1.) Mixed traffic between cyclists and vehicles

Here exists only one problem for VIPs: If cyclists are driving against a one way street the blind and vision impaired people are not able to hear them, because they have to concentrate themselves to locate the vehicles which are using the one way street. On each crossing (controlled and uncontrolled) the priority for pedestrians must be guaranteed.

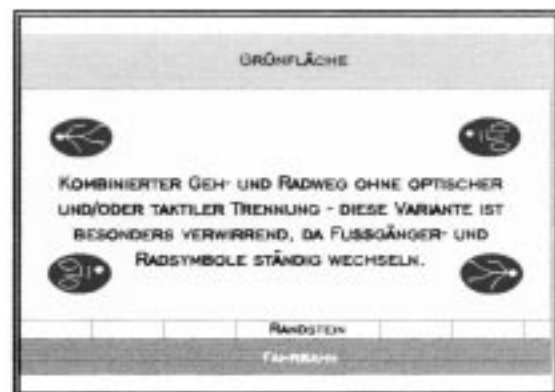
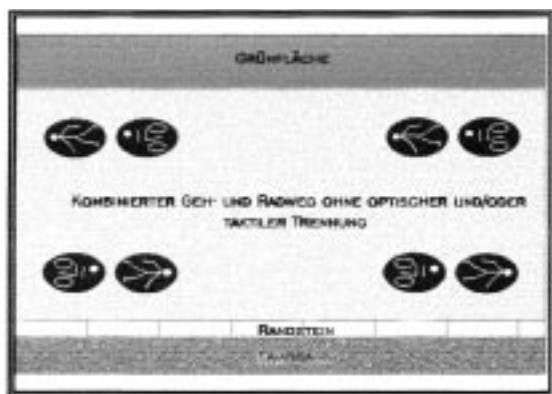
2.) Mixed traffic between cyclists and pedestrians

Here we could find the most difficulties for blind and vision impaired people (just as for elder people, children, parents with baby carriages or infants ...). because fast driving cyclists are dangerous for all pedestrians. The result of a mixed pedestrian and bicycle area is the permanent increase of mobility restriction by pedestrians.

In the following pictures we present some negative examples of mixed pedestrian and bicycle areas, but also some improvements, which consists a sensible side by side between cyclists and pedestrians with the especially consideration of necessities for blind and vision impaired people. All tactile ground floor information's are corresponding to the ÖNORM V 2100 (Austrian standard)

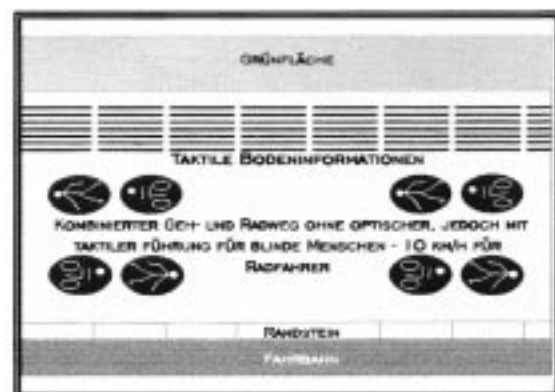
Picture 1:

If sidewalk and cycle track are side by side on the same level and there is no separation between the two areas, the pedestrians will get a dangerous feeling. In this situation the pedestrians will be confused additionally through the permanent changing of the symbols. This variety shouldn't be realised.



Picture 2:

Sidewalk and cycle track side by side on the same level without an optical and a tactile separation cannot be accepted by blind and vision impaired people, because they are not able to find a safety way.

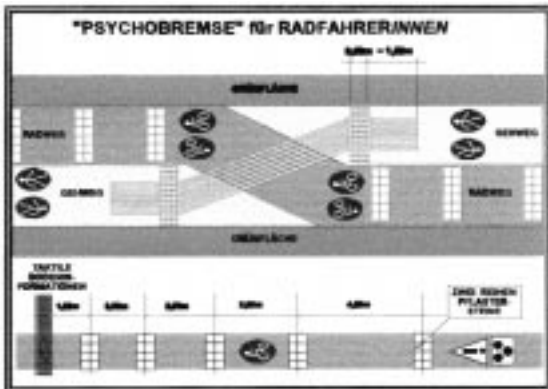


Picture 3:

If there are compelling reasons for mixed pedestrian and cycling areas, the maximum speed for cyclists must be 10 km/h. For blind and vision impaired people tactile ground floor information must be obligatory.

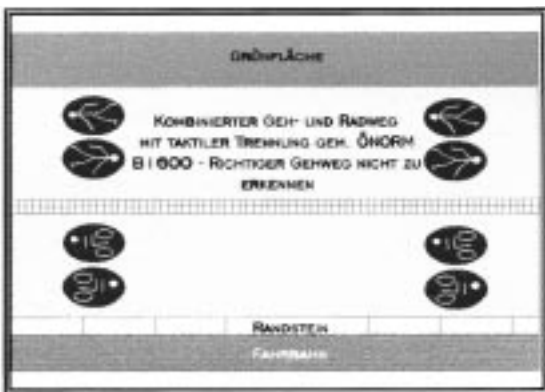
Picture 4:

Crossing between a cycle track and a footway without a tactile separation. Blind and vision impaired people are not able to find the right way.



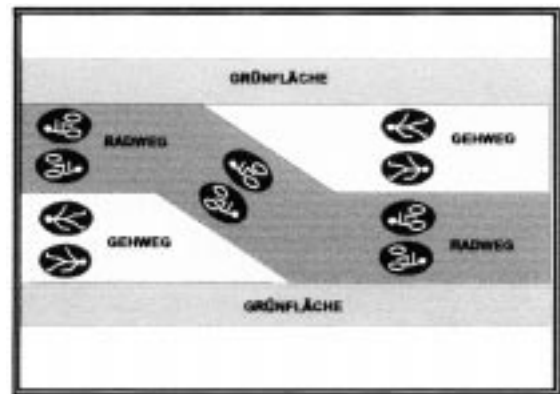
Picture 6:

If sidewalk and cycle track are side by side on the same level and there is only an optical separation (for example: road markings), blind and vision impaired people are not able to recognise the right walking area. This type of combined foot- and cycle way is not rejectable.



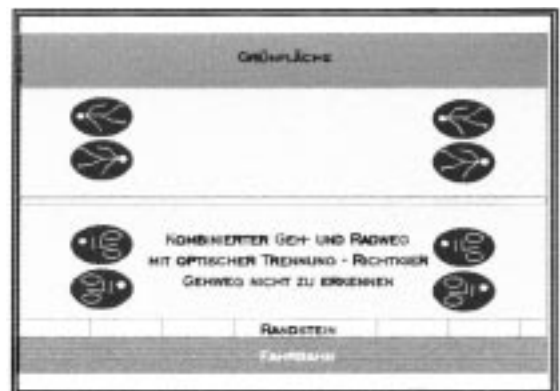
Picture 8:

Remedy is possible by marking the pavement with tactile ground floor information according ÖNORM V 2102. In this case the tactile separation according ÖNORM B 1600 is not unconditional necessary.



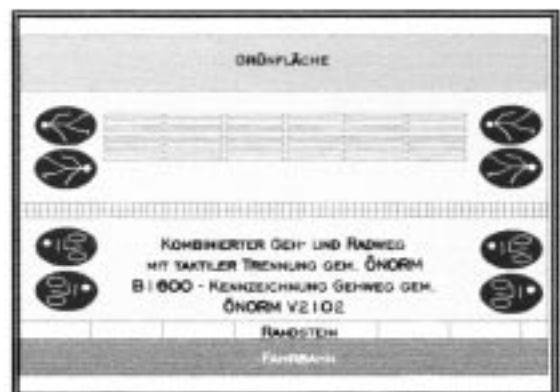
Picture 5:

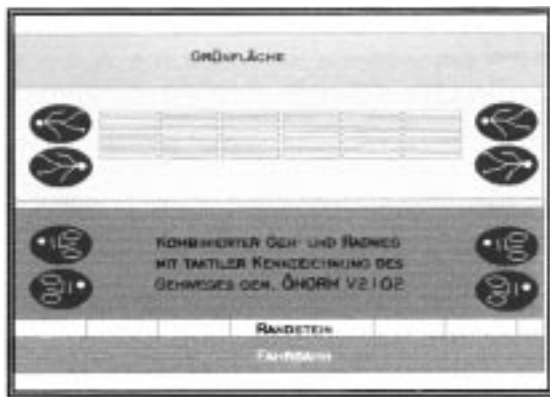
If a crossing between a footway and a cycle track is necessary, the footway must be tactile recognisable for blind and vision impaired people. That cyclists are able to recognise the dangerous area and to reduce their speed, for each approach a 'PSYCHO-BREAK' is necessary.



Picture 7:

If sidewalk and cycle track are side by side on the same level and the separation take place only by a tactile stripe, dangerous confusions for blind and vision impaired people are possible. This type of combined foot- and cycle way is not rejectable.





Picture 9:

If sidewalk and cycle track are side by side on the same level and the structure of the floor covering is the same, it is possible to avoid dangerous confusions through tactile groundfloor informations according ÖNORM V2102.

Picture 10:

If sidewalk and cycle track are side by side on the same level, the structure between the two areas should be optical (cycle line in red, side walk in grey colour) and tactile (side walk smooth asphalt and cycle line with structured paving-stones) different. Blind and vision impaired people are able to realise their pavement. The chosen structures should be the same in the whole city, so it isn't necessary that VIPs have to learn different systems.

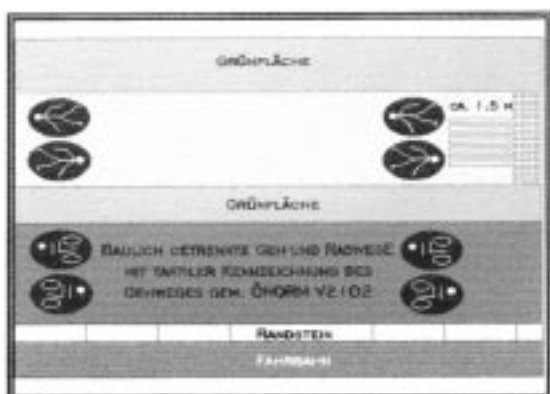


Picture 11:

If sidewalk and cycle track are side by side, but on a different level, the height of the kerb must be three centimetre minimum.

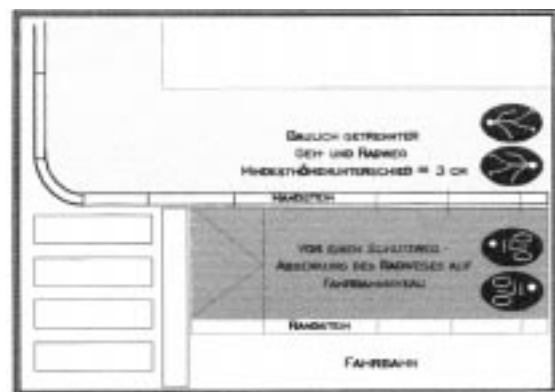
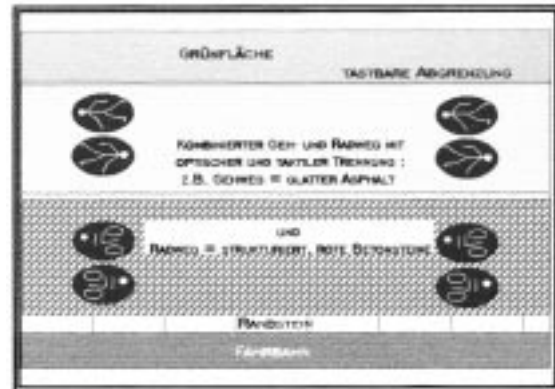
Picture 12:

In the area of pedestrian crossings cycle tracks, which are built over the roadway, should be sink down to the level of the carriage way. So VIPs are able to reach the safety walking area and don't enter the dangerous cycle track. In this way confusions are not possible.



Picture 13:

Separated sidewalks and cycle tracks with tactile ground floor information on the pavement. VIPs are able to find the sidewalk.



Picture 14:

Guidance of the cycle lane in the area of a bus stop.

Disadvantage for VIPs: They are not able to recognise the bus station.



Picture 16:

Cycle track in front of a tram or bus stop. This solution is extremely dangerous and shouldn't be realised.



RESUMEE:

All traffic situations must be clear and understandable, especially to disabled persons.

- Cycle tracks on the same level and side by side to the pavement, should be restricted only by singular special situations.
- Between the two areas, the tactile contrast always must be optimal
- The best way to reach this goal is a difference between the structure of the two areas (for example: pedestrian area = smooth surface; cyclist area = red paving stones)
- For generally using by blind traffic participants it is necessary to offer them the same system in the whole city (country).
- If there is a mixed pedestrian and cycle area, it is absolutely necessary that the allowed speed for cyclists is near the pedestrian speed.
- The maximal speed for cyclists must be fixed with 10 km/h.
- All tactile ground floor information's must be arranged by an union between the traffic authority and the experts of associations of blind and vision impaired people.

In future more and more elder people will be road user in our cities. The steps, which are just now necessary for blind



Picture 15:

Guidance variation of a cycle track in the area of a bus stop, which is to prefer.

The area of the bus station is marked with tactile ground floor information according ÖNORM V 2100. Optional it is possible to mark the area of the first bus-door (driver) or the position of the station sign. A ?PSYCHO-BRAKE? for the cyclist approach is necessary.



Picture 17:

Optimal cycle track in the area of a tram stop.

INTEGRATING URBAN DESIGN: MEETING THE NEEDS OF PEOPLE WITH ACCESS DISABILITIES ... AND CYCLISTS

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INTEGRATING URBAN DESIGN: MEETING THE NEEDS OF PEOPLE WITH ACCESS DISABILITIES ... AND CYCLISTS

Improved cycling infrastructure for cyclists is the expected goal of cycling advocates. Identifying and promoting common needs of various groups provides a powerful alliance to achieve goals individual groups may find difficult. This is generally true for pedestrians, cyclists, people with disabilities and in particular, cyclists and those with access disabilities who rely on wheeled equipment.

By reference to examples, benefits of facilities and conditions provided for each of these groups are used to demonstrate their potential benefit for others and to reduce conflict by design.

By seeking infrastructure and operating conditions which better suit the needs of the larger alliance of groups, current competition for separate space and resources will be minimised.

ENGLISH

INTEGRIERENDE STADTPLANUNG: ERFÜLLUNG DER BEDÜRFNISSE VON MENSCHEN MIT FORTBEWEGUNGSSCHWIERIGKEITEN ... UND RADFAHRERN

Eine verbesserte Radinfrastruktur ist das erklärte Ziel der Befürworter des Fahrradverkehrs. Die Identifizierung und Förderung gemeinsamer Bedürfnisse verschiedener Gruppen bietet die Möglichkeit zu einer mächtigen Allianz, um Ziele zu erreichen, deren Umsetzung einzelnen Gruppen unter Umständen schwer fallen würde. Dies gilt allgemein für Fußgänger, Radfahrer und Behinderte und insbesondere für Radfahrer und Menschen mit Fortbewegungsschwierigkeiten, die auf Fortbewegungsmittel mit Rädern angewiesen sind.

Durch Bezugnahme auf Beispiele werden die Vorteile von Einrichtungen und Bedingungen, die für jede dieser Gruppen geschaffen werden, herangezogen, um ihren möglichen Nutzen für andere aufzuzeigen und um Konflikte durch Planung zu reduzieren.

Indem man nach Infrastruktur und Betriebsbedingungen sucht, die den Bedürfnissen der größeren Allianz verschiedener Gruppen besser entsprechen, wird der gegenwärtige Konkurrenzkampf um jeweils eigenen Raum und separate Ressourcen minimiert.

DEUTSCH

INTEGRACIJA URBANIH MODELOV: UPOŠTEVANJE POTREB INVALIDNIH OSEB... IN KOLESARJEV

Pričakovani cilj zagovornikov kolesarjenja je izboljšana infrastruktura za kolesarje. Prepoznavanje in promocija skupnih potreb različnih skupin, zagotavlja močno zaveznitvo za doseganje ciljev, ki so za individualne skupine nedosegljivi. To velja za pešce, kolesarje, invalide in posebej za ljudi, katerim je zaradi vozičkov, otežen dostop.

S primeri so pokazane prednosti infrastrukture in okoliščin, ki jih uporabljajo in veljajo za posamezne skupine, ter tudi njihova potencialna uporabnost za ostale skupine. Potrebno pa se je izogniti nasprotjem v obliki.

Sedanje tekmovanje za ločen prostor in denarna sredstva bo zmanjšano, če bomo poiskali infrastrukturo in obratovalne pogoje, ki bodo bolje odgovarjali potrebam večih zaveznških skupin.

SLOVENSKO

INTEGRATING URBAN DESIGN: MEETING THE NEEDS OF PEOPLE

INTRODUCTION

Urban lifestyles require both mobility and accessibility such that people are able to freely move about and be able to get to the many facilities, necessities and pleasures available in urban areas. However, in doing so, two fundamentals need to be observed. Firstly, the impact of moving through the urban fabric should not inconvenience or reduce the quality for others. Secondly, the ability to move through urban areas should be available to everyone such that some groups are not better provided for to the disadvantage of others. By assessing urban transportation as mobility and accessibility and using these two fundamentals to guide urban design, planning, provision and use, both quality of life and mobility can be enhanced for all those who use or wish to use urban areas.

ACCESS DISABILITY

Mostly people associate disability with those whose disability is obvious eg having obvious difficulty climbing stairs or people using an aid such as a hearing aid, a guide dog or a wheelchair. Experience of the needs of people with access disabilities is however often limited to personal experience eg an elderly injured relative or friend, or to observations of or assisting others in public eg while using public transport or shopping. General community understanding of disability and in particular access disability is therefore often rather limited. Accordingly, the provisions to reduce or eliminate difficulties for people with disabilities are also rather scarce but, when present, seem both expensive and excessive. Thus, before considering what is needed to improve accessibility and mobility, a more detailed understanding of what access disability is, who it effects and how it effects all of us is necessary.

When we are very young, we suffer from access disability. Accessibility and mobility are very restricted. Stairs are dangerous and difficult, slippery and sloping surfaces are risky, traffic threatens us. It is difficult to find our way into new or unfamiliar places. We learn that walking outside our space is dangerous. It might seem to younger people that the world has been designed that way. Of course, being designed primarily by and for adults, it has been!

The same criteria apply through early school ages and on to middle and high school. As young adults, we not only have become adept at overcoming access difficulties, we quite naturally forget them! Accessibility and mobility are no longer so restricted. Stairs are no longer dangerous and difficult, slippery and sloping surfaces are risky, but we now know how to overcome the risks, traffic threatens us but we are now able to avoid it. It is no longer as difficult to find our way into new or unfamiliar places. Of course, being designed primarily by and for adults, it suits us!

But before continuing our own life story, access difficulties do actually occur during these periods of youth and early adulthood. Illness or injury can give us experience of reduced accessibility and mobility. A broken leg will not fit the seating on the school bus and makes the steep stairs almost impossible. A friend who now needs to use a wheelchair cannot get to all the places we would like to go. Recent research is showing that we all suffer in particular from local access disability impacts although few realise how much.

Australia is always thought to be a place of low density cities and towns and of plenty of space. Yet even there, a recent major study (Cunningham et al, 1996) has shown that children are being severely deprived of educational and physical experience and exercise. By being driven to organised activities, avoiding the dangers of traffic means children are unable to discover the risks, the skills and the self-confidence necessary. It happens to most of us!

These avoidance strategies also mean that the threats and risks are not only not addressed, but allowed, and often, by design, made worse. As explained above, we have learned so well how to avoid them in our youth, sometimes to the point where it is actually quite difficult to identify the many common threats. However, this difficulty is easily overcome when, rather than being in familiar places where we know what the risks are and how to avoid them, we find ourselves in unfamiliar territory, perhaps in a foreign country where we cannot read signs or understand or speak the language or read the local rules. Suddenly we are effectively blind, deaf and unable to speak and any signs or maps are difficult but potentially helpful if only we could understand them. Similarly, with access disability.

And then we begin to feel the effects of older age. Again, we suffer from increasing access disability. Accessibility and

mobility again become increasingly restricted. Stairs become more dangerous and difficult, slippery and sloping surfaces more risky, traffic again threatens us even when we are driving! It becomes more difficult to find our way into new or unfamiliar places. It might seem to the older person that the world has been designed that way. Of course, being designed primarily by and for young adults, it has been! With age comes inevitable deterioration of abilities. In that sense, ageing inevitably increases access disability. Yet there are many more access disabilities.

For example, economic access disability occurs when cost and/or lack of money or resources reduce accessibility and mobility. Examples include the necessity to have a car due to lack of other adequate alternatives. This may impact on people of all ages from the very young unable to be taken to other places eg for trips to the country, students eg at university or college some distance from home, and the elderly or those with restricted or minimal income or welfare support who are forced to spend money on expensive modes eg taxis and therefore to reduce ability to experience other basic needs often even food or medical support. Yet most needs could be met locally.

Another form is environmental access disability which can include people threatened by weather conditions eg too hot or too cold, and by particular forms of pollution eg those suffering from or threatened by asthma or reduced lung or cardio-vascular performance where even increased exertion from walking too far can be a risk factor.

A final and particularly important form of access disability is the perceived and/or real fear or threat eg (1) the lack of accessibility or mobility, (2) the imposition upon others to assist in overcoming the disability eg needing and being forced to rely on assistance of other people who may not even be available or (3) the vulnerability and/or personal insecurity of being vulnerable. Examples include using public transport but unsure of being able to get to a new destination because of steps or other barriers and lack of directional material eg accessible route maps, braille maps or textured or tactile surfaces. Finally, all people feel somewhat threatened by new environments. For people who already are vulnerable or threatened by lack of certain mobility and accessibility, any sense of personal insecurity much increases the likelihood that trips simply will not be made or will be made under considerable, perhaps unreasonable, pressure and tension. Should trips in urban areas be under such conditions by design?

INTEGRATION

As has been shown above, access disability potentially but inevitably impacts on all of us. By substitution or avoidance if we can, we tend to minimise the impacts of access disability although often at considerable cost to ourselves and/or others, eg by buying a car or hiring a taxi, yet excessive provision for and dominance of cars increases access disability for those not using them. We need to reduce the impacts on others (Yeates 1998a).

Provision in urban design for people with a particular access disability, eg reliance on wheelchairs or on tactile indicators, frequently serves only to emphasise the extent of such disability and the cost of specific remedial or avoidance projects eg safe and convenient overbridges, underpasses, lifts, ramps and disabled access for public transport, urban areas, public spaces, buildings and facilities. The huge cost for so relatively few people specifically identified as beneficiaries tends to preclude any but very minor improvements for them.

However, the whole-of-life perspective and awareness of how access disability impacts on all of us means that all improvements are in fact for all of us! Even if we are not as effected as others, everyone gains.

Of course, in practice not everyone gains. Current urban design and transportation design has, as we have seen above, primarily, been provided for the fit, able young adult. The massive expenditure on continued provision for this group cannot continue if the unmet needs of others are to be met without increased funds. In some countries, population growth is not stable. In Australia, a post World War 2 baby boom and increased in-migration created a major cohort of "baby boomers" now aged 50+ including me! We and especially our parents and their friends and relatives are experiencing disability access. We look for ramps and lifts rather than stairs! Better, more accessible public transport and urban areas and facilities such as shopping centres, medical and hospital services are becoming essential and reliance on cars impractical. Provision of special disability services is expensive and somebody has to pay. Most people do not like to admit to being in need until they are forced to. Life in cities and towns should not be so threatening. Access should and can be easy for almost everyone.

So what does "integration" mean for urban design and transportation design in urban areas? What are some of the major impacts and benefits? Who and what do we ask for advice (Yeates 1998a).

whole-of-life awareness of access disability is essential to inform and influence the decision makers to provide an accessible urban environment for all of us. This suggests urban areas where children and adults of all ages and abilities are safe, where accessibility and mobility allows safe and convenient access such that people of all ages and abilities can learn, explore, exercise and enjoy their urban environment with minimum threat and impact on others. Such a place is likely to be more healthy, more safe, more convivial, more community aware, more sustainable. A place where people care for others much more.

Secondly, such a place will make those with access disability more obvious. It will allow and welcome them by making the place accessible to all. All people will feel safer, more comfortable, less threatened, more welcome. But it will also work better for all of us because it will provide better accessibility and mobility. It will have more and better accessible public transport. Escalators and stairs will be replaced by safer, more secure and convenient ramps, travelators and lifts. The roads will be safer with convenient and safe crossings. Footpaths, doorways and roads will no longer be barriers to walking or using a wheelchair.

Thirdly, footpaths and pedestrian areas will expand to again provide adequate space, safety and convenience for pedestrians and also for those with access disability. The priority of pedestrians will continue to expand "pedestrian priority" and 30km/h speed limits throughout urban areas provide safe, connected and convenient walking. Public transport will use smaller accessible buses for easy, short trips to fully accessible, local, urban and transportation centres. However, these will be almost self-sufficient as integrated urban design and transportation design policy requires. European experience has shown integrated urban and transportation design is more efficient, more economic, more environmental and more healthy and seems more sustainable and thus more viable, for the future.

AND WHAT OF CYCLING?

The urban design and transportation design requirements for urban areas with high levels of accessibility and mobility require safety and convenience for people of all ages and abilities. The physical requirements of ramps, safe, operational space and perceived safety and security for all ages and abilities are essential for those who rely on wheelchairs and similar wheeled vehicles together with those who require smooth operating surfaces without steps or stairways and other barriers and designs that increase perceived or real insecurity and risk. Fully connected, safe and convenient footpaths and road crossings and the ability to cross and use roads due to "pedestrian priority" and 30km/h traffic speeds are also essential. A public transport system that is fully accessible reduces or removes barriers to access by provision of convenient, accessible operational space and access to and from vehicles and into the adjoining urban areas for all potential users. These conditions suit cycling in urban areas.

It appears that cycling requirements are in fact very supportive of and complementary to high levels of accessibility and mobility for all people due to the combination of very similar physical and efficiency operating criteria for safe and convenient walking, cycling and disability access. Complementarity rather than competition implies integration.

BUT DOES CYCLING THREATEN OTHERS?

For cycling to "fit" into an accessible urban area, it, as with all other modes of transportation, must not threaten others. Again a whole-of-life perspective is useful. It is clear that people including those with access disability are very threatened by cycling. People with limited hearing will not hear an approaching bicycle. People with limited vision will not see an approaching bicycle. Young children, other pedestrians and cyclists of all ages, can and will make sudden unexpected deviations. Some such conflicts are predictable and require cycling accordingly. Many others are equally predictable and can be reduced or eliminated by design which must include both space and any provisions for other vulnerable users (eg Sustrans,1994) rather than just for cyclists.

Use of safety and convenience audits to address the needs of all potential users is fundamental to achieving economical but substantial improvements in accessibility and mobility for all including cyclists. Clearly an access audit for a

proposed cyclists facility that does not address for example, convenience of pedestrians is highly likely to result in a path that is attractive to pedestrians resulting in conflict due to incorrect provisions and expectations. Similarly, a pedestrian and/or cycling facility that is inappropriate for those with an access disability or even for the intended users eg an expensive overpass with long steep insecure ramps is highly likely to be rejected or subject to complaint when it was really built to ensure through traffic benefited rather than the users, who most likely will continue to try to use their preferred routes or stop walking or cycling and use a car. Such outcomes are still prevalent and are clearly not exemplars of integrated urban design and transportation design. They can be avoided by ensuring all users inform the safety and convenience audits and that their needs are met (Yeates 1998b).

MEETING THE NEEDS OF ALL PEOPLE

Access disability impacts on all of us whether young, aged, adult, walking, cycling, whether trying to use public transport to get to shop, school or trying a trip to explore beyond a known world of experience. In particular, access disability impacts on urban design and transportation design by educating and then inculcating behaviour which first avoids and then ignores its impacts. Inclusion of a whole-of-life awareness of the impacts of access disability and integration of the needs of all people in urban areas will provide safe, convenient, convivial and more sustainable urban areas by design including for cyclists by integration and complementarity but not competition.

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METHODS OF FORECASTING BICYCLE TRAVEL

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METHODS OF FORECASTING BICYCLE TRAVEL

This paper summarizes the state of the practice in methods to forecast bicycle travel demand. These methods can be used to predict the number of users of a new bicycle facility, or to predict the increase in bicyclists as the result of an improvement program. A variety of stand-alone methods such as comparison studies, attitudinal surveys, and sketch-plan techniques are presented. Methods for integrating bicycles into standard transportation planning models, which have traditionally been used to forecast automobile and transit travel, are also described. While these methods can help planners prioritize projects and estimate project benefits, additional research is needed to increase the usefulness and accuracy of bicycle travel demand forecasting techniques.

METHODEN ZUR PROGNOSTIZIERUNG DES FAHRRADVERKEHRS

Dieses Referat faßt den gegenwärtigen Stand in bezug auf Methoden zur Prognostizierung der Nachfrage im Bereich des Fahrradverkehrs zusammen. Diese Methoden können verwendet werden, um zu prognostizieren, wie viele Radfahrer eine neue Radverkehrsanlage nutzen werden, oder um den Anstieg des Fahrradverkehrs infolge eines Verbesserungsprogramms vorherzusagen. Eine Vielfalt von Einzelmethode wie etwa vergleichende Studien, Verhaltensumfragen und Sketch-Plan-Methoden werden vorgestellt. Methoden für die Integrierung von Fahrrädern in die standardmäßigen Verkehrsplanungsmodelle, die traditionell verwendet werden, um den Automobil- und Transitverkehr vorherzusagen, werden ebenso beschrieben. Während diese Methoden den Planern helfen können, Projekte nach Priorität zu reihen und den Nutzen von Projekten abzuschätzen, ist zusätzliche Forschung erforderlich, um die Nützlichkeit und Genauigkeit von Techniken zur Prognostizierung der Nachfrage im Bereich des Fahrradverkehrs zu

METODE NAPOVEDOVANJA KOLESARKEGA PROMETA

Prispevek povzema stanje v metodah za napovedovanje potreb kolesarskega prometa. Te metode se lahko uporabljajo za napovedovanje števila uporabnikov novih kolesarskih infrastruktur ali za napovedovanje porasta števila kolesarjev, kot posledica izboljšav.

Predstavljena je raznolikost posameznih metod, kot so primerjalne raziskave, ocenjevanje vedenja in tehnika načrtovanja osnutkov. Opisane so tudi metode integracije koles v standardne modele načrtovanja prometa, ki so jih običajno uporabljali za napovedovanje avtomobilskega in tranzitnega prometa. Medtem ko lahko te metode pomagajo določiti prioritete projektov in oceniti njihove koristi, pa je za povečanje uporabnosti in natančnosti tehnik, ki napovedujejo potrebe kolesarskega prometa, potrebno dodatno raziskovanje.

METHODS OF FORECASTING BICYCLE TRAVEL

1.0 WHY FORECAST BICYCLE TRAVEL?

The need for improved conditions for bicyclists has received increasing attention in recent years in the United States as well as in other countries. Existing levels of bicycle use are low in most U.S. cities compared to European cities, but planners are recognizing a growing popular interest in bicycling. Reasons for this interest include health and recreation; the desire to promote environmentally sound alternatives to automobile travel; and the need to provide safe and convenient travel for people who do not have a car. However, the amount of bicycling in the U.S. is limited by a number of factors, including - perhaps most importantly - a lack of safe and convenient facilities for bicycle travel. (The word "facility" is used here to mean an on-road bicycle lane or route, or an off-road bicycle path.)

Support is growing for new and improved bicycle facilities, especially for converting abandoned railroad rights-of-way into paths for travel and recreation. But in most cities, progress has been slow. Planners and policy makers are often not convinced that people will use the paths or that the benefits of the improvements are worth the costs. Also, financial resources are limited, and planners need to know where to spend these limited resources to obtain the greatest benefits to both existing and new users. As a result, the question of how many people will use a new or improved bicycle facility is becoming increasingly important.

In response to this need, the U.S. Department of Transportation, Federal Highway Administration has developed a guidebook on methods to estimate future levels of bicycle and pedestrian travel, or "travel demand." The methods documented in the guidebook are summarized in this paper. (While specific travel characteristics and forecasting techniques may be different for bicyclists than for pedestrians, the general types of methods discussed here apply to both modes of travel.) These forecasting methods address the following questions:

- If we build a new bicycle facility, how many people will use it?
- If we improve an existing facility or network of facilities, how many additional people will choose to bicycle?
- What types and combinations of improvements will have the greatest impact on increasing bicycle travel?
- How will improvements to bicycle travel conditions affect regional transportation access, mobility, traffic congestion, and air quality?

2.0 OVERVIEW OF METHODS

A variety of methods are available to planners who wish to forecast bicycle travel demand. Some methods do not forecast demand directly, but instead can be used to support demand forecasting or project prioritization. These methods fall into four categories:

- Demand estimation - methods that provide quantitative estimates of demand;
- Relative demand potential - methods that do not predict actual demand levels, but that can be used to assess potential demand or relative levels of non-motorized travel;
- Supply quality analysis - methods that describe the quality of bicycle facilities ("supply") rather than the demand for such facilities. These methods can be used to prioritize improvements and as an input to forecasting demand;
- Supporting tools and techniques - methods such as Geographic Information Systems (GIS) and preference surveys that can be used to support demand forecasting or other project analysis activities.

Factors to consider when selecting an appropriate method include the application scale (specific facility or entire area); desired accuracy; available resources (time, money, expertise); and the specific purpose and goals of the analysis.

DEMAND ESTIMATION METHODS

COMPARISON STUDIES

The simplest form of demand forecasting, comparison studies compare usage levels before and after a change (such as a facility improvement), or compare travel levels across similar facilities. Before-and-after studies have been widely used in Europe to assess the mode choice impacts of city-wide programs to improve bicycle conditions. Studies have also focused on specific facilities, conducting user counts before and after an improvement to the facility. A recent study in Massachusetts, for example, used counts from existing rail trails, factored by local population, to forecast the number of users on a proposed rail trail with similar characteristics. Comparison studies are simple to understand and relatively easy to apply, but may overlook many factors which lead to different usage levels on similar facilities.

AGGREGATE BEHAVIOR STUDIES

Aggregate behavior studies involve the development of models to predict mode split or other travel behavior characteristics at an area level, such as for residents of a census tract, city, or metropolitan area. An example of an aggregate model is an equation to predict the bicycle mode splits of individual census tracts, based on the average income of the tract and on the total length of bikeways in the tract. Aggregate behavior models have identified some factors that can be related to non-motorized travel, but generally have had low explanatory power and have not been successful at predicting mode splits when applied to other areas.

SKETCH PLAN METHODS

Sketch plan methods can be defined as a series of simple calculations to estimate the number of bicyclists using a facility or area. These methods generally rely on data that already exist or can be easily collected (such as census and land use data), combined with assumptions about behavior taken from other studies. Sketch-planning methods can give rough estimates of the number of users of a proposed facility, but have trouble accounting for the effects of specific local conditions or facility design characteristics.

DISCRETE CHOICE MODELS

A discrete choice model predicts a decision made by an individual (choice of mode, choice of route, etc.) as a function of any number of variables, including factors that describe a facility improvement or policy change. Discrete choice models can be used to predict the mode split impacts of bicycle improvements and to determine relative preferences for facility design features. Discrete choice models can be effective at isolating the effects of specific factors on travel behavior as well as examining the interaction of each factor with other factors. However, developing a discrete choice model generally requires considerable expertise as well as the collection of extensive local survey data. Figure 1 illustrates a type of survey question that may be used to develop a discrete choice model.

Figure 1 Example of a Hypothetical Choice Experiment



and bicycling as options. The regional travel model framework is a potentially powerful tool for analyzing mode choices and route choices, and for predicting total bicycle travel and the location of this travel. Future advances in data collection and modeling techniques will greatly improve the ability of regional travel models to analyze bicycle travel.

RELATIVE DEMAND POTENTIAL

MARKET ANALYSIS

Market analysis is a relatively common type of approach which estimates the maximum potential number of trips by bicycle in an area, based on a target market of bicyclists. Some studies have applied rules of thumb about the maximum likely percentage of bicycle trips by trip length and purpose. Others have focused on defining the demographic characteristics of people most likely to walk or bicycle. These methods assume an "ideal" network of facilities and cannot predict the demand impacts of specific improvements. However, they can be used to prioritize improvements toward areas with population and trip characteristics that support bicycle travel.

FACILITY DEMAND POTENTIAL

Measures of potential demand for individual bicycle facilities estimate the potential for trip-making on the facility, based



improvements and to quantify the potential for bicycling in the City of St. Lucie, Florida. Scores were used to develop recommendations and priorities for bikeway network projects.

REGIONAL TRAVEL MODELS

Regional travel models are commonly referred to as "four-step travel demand models." These models use existing and future land use conditions and transportation network characteristics, combined with models of human behavior and data on existing travel patterns, to predict future travel patterns in a metropolitan region. Regional travel models are used in every major city in the U.S. to forecast future automobile and transit trips. These models are a required part of the metropolitan transportation planning process defined by the U.S. Department of Transportation. Similar models have also been used in Europe to forecast urban travel, although not as extensively.

Most existing regional travel models are scaled for automobile travel and do not include bicycle or pedestrian trips. A number of models in the U.S., Canada, and Europe, however, have recently been modified to include walking

on the size and trip-making characteristics of population and activity centers near the facility. These measures can be a useful aid to prioritizing locations for improvements. They can also be applied in conjunction with measures of supply or facility quality to identify areas of both high potential demand and significant deficiencies. However, they do not indicate which improvements or policies will be most effective at increasing bicycle travel.

Figure 2 Application of the Latent Demand Score in Florida

Figure 2 illustrates the application of a Latent Demand Score (LDS) to target areas for

SUPPLY QUALITY ANALYSIS

BICYCLE AND PEDESTRIAN COMPATIBILITY MEASURES

Compatibility measures have been developed to indicate the suitability of a particular facility for bicycle travel. The measures combine factors such as motor vehicle traffic volume and speeds, lane width, and pavement quality into an index of overall suitability for travel. Compatibility measures are useful for prioritizing facility improvements. They will also be useful in demand forecasting once relationships are developed between the measures and a person's likelihood of making a bicycling trip.

ENVIRONMENT FACTORS

Environment factors describe the "friendliness" of an area (such as a city block, census tract, or traffic analysis zone) for bicycling and/or walking. Examples of characteristics considered include lane or sidewalk width, street continuity, hills, and the visual quality of the environment. Environment factors have improved the accuracy of mode split predictions in regional travel models. However, they require considerable data collection, and they rely on subjective assessments and arbitrary weightings of an area's characteristics.

SUPPORTING TOOLS AND TECHNIQUES

GEOGRAPHIC INFORMATION SYSTEMS

Geographic Information Systems (GIS) relate network and area-level data in a spatial framework. GIS have been used in non-motorized planning to inventory and evaluate facilities such as roads and sidewalks; establish spatial relationships between roadway network links, activity centers, and area population characteristics; compare and display current conditions with projected travel and conditions; identify optimal routes; and produce printed maps. Geographic Information Systems can greatly increase the ease of analyzing existing data and can allow new types of analysis to be performed. On the other hand, they are only a tool rather than an actual method for forecasting demand.

PREFERENCE SURVEYS

Using survey research techniques, preference surveys focus on the choices that people would make given discrete alternatives. Respondents are asked to express an attitude or make a choice as to how they would act under certain conditions. Simple preference surveys, known as "attitudinal surveys," ask respondents whether they would change their behavior in response to a particular improvement, or how they would rank the importance of various improvements. Attitudinal surveys are relatively easy to design and implement, but people generally overstate the likelihood of changing their behavior in response to a bicycle improvement. More advanced "hypothetical choice" surveys force people to make tradeoffs between various factors in quantitative terms (Figure 1) and are commonly used to develop discrete choice models.

3.0 CONCLUSIONS

This paper has provided a brief introduction to the available methods for forecasting bicycle and pedestrian travel. While these methods can serve as useful tools to planners, bicycle demand forecasting is still an evolving field. A variety of factors in addition to facility and environmental factors influence the decision to bicycle. These include personal characteristics and needs, social and personal beliefs and attitudes, and the relative characteristics of competing modes for any given trip. Further research is required to better understand the various factors influencing travel behavior. Research is also needed to develop modeling techniques that can accurately describe these factors and how they interact.

4.0 FOR FURTHER INFORMATION

A two-volume Guidebook on Methods to Forecast Non-Motorized Travel is being published by the U.S. Department of Transportation, Federal Highway Administration. Volume I: Overview of Methods includes an overview of each method and discusses important issues to consider in forecasting future bicycle and pedestrian travel. Volume II: Supporting Documentation provides considerably more detail on each of the methods and describes real-world applications of the methods. Volume II also includes an annotated bibliography of published materials related to non-motorized travel forecasting. Information on how to obtain these documents will be available at the conference.

CYCLISTS' SPEEDS IN HIGHWAY MODELS

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ENGLISH

CYCLISTS' SPEEDS IN HIGHWAY MODELS

When large road schemes are designed in the UK, computer models of traffic are built to determine the effects of the changes. They do not normally consider cyclists. As a result, cycling is often forgotten when large scale transport planning is undertaken. Some attempts have been made to include cyclists in traffic models but a better understanding of the factors affecting cyclists' route choice and speed is needed. Speed is used as a proxy for other factors when determining route choice. This paper describes work done with a TRIPS model of Leicester to derive factors which can be used to modify cyclists' modelled speed, in an attempt to replicate their choice of route. Considerations include congestion, highway surface, quality of traffic environment and route knowledge.

DEUTSCH

DIE GESCHWINDIGKEIT DER RADFAHRERN IN IV NETZ MODELLE

Wenn große Straßenmassnahmen in U.K. entworfen werden, werden Verkehrsmodelle eingesetzt, um Wirkungen der Änderungen zu studieren, die normalerweise das Radfahren nicht berücksichtigen. Deswegen werden sie oft vergessen im Übergeordneten Verkehrsplanung. Man hat einige Versuche gemacht, das Radfahren in den Modellen miteinzuschließen, aber ein besseres Verständnis der Routenwahl der Radfahrer ist notwendig. Wenn man die Routenwahl in einem Modell berechnet, ist die Geschwindigkeit - als Ersatz für andere Faktoren benutzt. Dieser Vortrag beschreibt die Arbeit mit einem TRIPS Modell für die Stadt Leicester, wo die Geschwindigkeit der Radfahrer zu studieren war. Einige Parameter für die Korrektur der Fahrradgeschwindigkeit, um eine realistische Routenwahl zu erreichen, wurden erzeugt. Diese Faktoren berücksichtigen Zeitverlust im Stau, Routenkenntnis, Straßenbeleg und Qualität des Verkehrsmilieus.

SLOVENSKO

HITROSTI KOLESARJEV V CESTNIH MODELIH

Ko v Veliki Britaniji delajo osnutke za velike cestne projekte naredijo računalniške modele prometa, da ugotovijo učinke sprememb. Kolesarjev navadno ne upoštevajo. Kot rezultat tega je kolesarjenje v načrtovanju prometa pogosto pozabljeno. Kolesarje so nekajkrat poskušali vključiti v prometne modele, vendar je potrebno boljše razumevanje faktorjev, ki vplivajo na kolesarjevo izbiro poti in hitrosti. Hitrost, pri odločanju za pot, uporabljajo kot nadomestilo za ostale faktorje. Prispevek opisuje delo z modelom TRIPS, za mesto Leicester, kjer so proučevali hitrost kolesarjev. Dobili so nekatere parametre, ki jih lahko uporabljajo za korekturo hitrosti kolesarjev z namenom, da reproducirajo njihovo izbiro poti. Ti faktorji upoštevajo izgubo časa v prometnem zastoju, poznavanje poti, kakovost cestne površine in kvaliteto prometne okolice.

FRIDAY

CYCLISTS' SPEEDS IN HIGHWAY MODELS

INTRODUCTION TO MODELLING

What is modelling? It is a process which attempts to represent the effects of behaviour and events in such a way that it is possible to make predictions about events in the future. In the case of highway modelling, this is done by reducing interactions to mathematical processes.

The activities that have been reduced to numbers can then be manipulated by mathematical functions. For traffic, the area in which we are interested, 'assignment' highway modelling takes the approach that every journey has a cost associated with it. This may be expressed in monetary units (e.g. the price of car parking), but is normally expressed in terms of time or distance associated with a journey (for example, if journey B is longer than journey A then journey B

is considered to have the greater cost). Individual elements of journey costs are added together to produce a final cost. For example, the time lost because of the effect of congestion may be added to the time the journey would take if there was nothing to slow it down (free-flow speed) to arrive at a congested journey time.

Other measures are possible: one sometimes used is 'attractiveness', which may be defined in terms of surroundings (subjective) or, for example, hilliness (objective).

For the purposes of modelling, the motorists' objective is assumed to be to minimize costs (e.g. a weighted combination of time and distance). The evidence is that cyclists have similar objectives (see Sharples, 1999 and Hopkinson et al, 1989). However, cyclists sometimes have a greater choice of route, since there are routes open to them which are not available to motorists. This includes cyclepaths and paths shared with pedestrians. These may be adjacent to the carriageway or through, for example, parks or other designated recreational routes. Cyclists can also make use of areas which are banned to cycling, such as pedestrianized areas, by dismounting and pushing their cycles. Cyclists sometimes cycle in these areas illegally, although in the absence of any surveys of the frequency of this behaviour, it is not possible to tell whether this happens often enough to distort the results of the model.

Another factor is the legal system of the location in question. In England, cyclists have a right to use any highway from which they are not specifically banned (an example of the latter is motorways). They don't have to use a cycle track just because it has been provided. However, in some countries, such as Germany and the Netherlands, cyclists are required to use a cycleway rather than the adjacent carriageway if the former exists. This will restrict the choice of (legal) routes through a network for cyclists.

The relationship connecting time and distance is speed, so speed and anything for which speed can be a proxy, can be used to evaluate journey costs.

Because modelling is normally used to make predictions, it is usual to create more than one model. The first model represents the base year, against which changes will be compared (and which should be calibrated to ensure that it is a realistic representation of that year). The other, future, model represents a year in the future - perhaps five, fifteen or 25 years after the base year. It incorporates changes, the effects of which are to be tested, such as new roads and a change in population. It is used to gain some idea of the effects these changes will have.

The highway model for cycling route choice purposes consists of a highway network, represented in the computer by links (stretches of road, path, etc) joined at nodes (i.e. junctions or changes in the nature of a link). Not all roads and paths (and therefore junctions) are represented in the network; only those which are relevant. Nor is it necessary, even when building the network representation with a graphical tool, to include every bend in the road - only the start and finish point of the link are important. To add such unnecessary detail to a model increases the time required to create the network and the computer time required to run it.

Associated with an (essentially) static highway network are the tables (matrices) of origins and destinations which represent the journeys of the users of the network.

When a network has been built and a matrix of journeys constructed, it is necessary to assign the journeys to the network to determine which routes are taken through it. There are several algorithms used for this; the most relevant to (U.K.) cycling are the so-called stochastic methods, which reflect the variability of the reasons people use to choose a route: for example, limited knowledge of the routes available and uncertainty about the actual 'cost' of using a specific route.

Once the assignment has been done and the trips loaded onto the network, further analysis of the model can be undertaken: for example, the effects of adding more cycle routes, or an examination of the network to find gaps in the cycle network.

This article discusses work done to model cycling in Leicester, England using the TRIPS highway modelling package. TRIPS is a general purpose model and therefore contains no built-in assumptions about how the amount of cycling relates to the land use, population or employment patterns of the study area.

LEICESTER

Leicester is a medium sized city (population 400,000) in the midlands of England with pro-cycling policies.

Cycling initiatives include a network of cycle routes around and through the city; and a cycle centre, known as the Leicester Bike Park, which provides supervised cycle parking. Cyclepaths are also provided on much of the outer ring road although the provision for negotiating the roundabouts is limited.

These cycle routes use a combination of quiet roads, converted disused railway, shared footways, park paths and cyclepaths beside roads. Special crossings and bridges have been installed in places to help cyclists cross roads; there are also shared subways, a contraflow cycle lane and cyclist exemptions to road

closures.

LEICESTER CYCLE MODEL

The construction of the Leicester Cycle Model was undertaken by MVA as part of the Central Leicestershire Strategic Transport Studies (CALTRANS). The object was to create a model suitable to carry out an outline appraisal of the cycle schemes proposed for Greater Leicester; suitable for use by the client's cycle development staff; and to provide data inputs to the strategic model used in the CALTRANS study).

The cycle model was based on the existing Greater Leicester Traffic Model. This covers an area with a radius of about 10 miles (16 km) from the centre of Leicester. The existing model was modified to make it more appropriate for cycling (e.g. new links, in particular those representing the city's cycleways and other cycle facilities, were added).

Two networks were created: one for the base year (1995) and one for the forecast year (2011). The base model contained all the cycling facilities which existed in 1995; the forecast year all the cycle facilities whose route or location had been finalized.

Matrices of cycle trips were synthesized, based mainly on the matrices of car and public transport trips which had been created for the Greater Leicester Traffic Model using assumptions about the amount of cycling in Leicester and relative trip length distribution. These were then adjusted to fit the available observations of the amount of cycling in Leicester, using journey to work estimates from the 1991 census and cycle counts which had been done by Leicester City Council.

The matrices for the forecast model were factored from the Greater Leicester Transportation Model on the assumption that cycling would represent about 12% of trips, including walk trips.

Speeds

This paper was prompted by a paper from the Velocity conference in Barcelona in 1997 (Barber, 1997), which discussed the use of GIS to model cycling. It asked what speeds should be used when attempting to model cycling. Therefore this paper concentrates on the choice of speeds and modifications to the chosen speeds although there are many other considerations when modelling cycling.

Cycling is a physical activity; cyclists' speed depends on their own strength and will therefore vary between individuals. This is in contrast to driving, where minimal strength is needed to alter the vehicle speed. Hence, there is greater variability in cycling speeds than for urban motorized traffic.

All modelling is an approximation to reality, and the output is no better than the input into the software. The saying 'garbage in, garbage out' is as true in modelling as in any other computing process. Therefore it is important that the information supplied to a model is as accurate as possible.

For this reason, the speeds used should reflect the actual conditions on the ground, rather than any desired outcome. For example, a cycle facility should not be assigned a speed higher than is likely to be attainable on the ground. To do so would cause cyclists to appear to travel faster and therefore their journey time, and associated costs, to be lower, than in reality. The model would assign more cyclists to that route, which would give a false impression of the viability of the route. It cannot be assumed that all cyclists will use a cycle facility just because it exists; the evidence is that cyclists value direct and/or fast routes more highly than those which are circuitous, even though the latter may appear to be safer (see Sharples, 1999 and Hopkinson et al, 1989).

In the Leicester model, therefore, speeds were assigned to cycle routes, depending on how fast cyclists were expected to be able to travel on the type of highway in question.

On links where cycling was not allowed, but which were thought to be likely to be part of a cycle route (perhaps as a short cut) a speed of 5 kph (walking speed) was assigned.

Paths shared with pedestrians, aimed at either the utility or the recreational cyclist, were assigned a speed of 10 kph, because it was felt that the presence of other, slower users means that cyclists would not be able to sustain the higher speeds they could achieve on the roads, as they would have to give way to pedestrians.

Furthermore, these paths are favoured by less confident cyclists and young children, who are likely to be cycling slowly. These paths are rarely more than two or three metres wide and therefore the presence of slower cyclists will invariably slow down cyclists who wish to ride fast.

In addition, the surface of some of these paths (where, for example they have been constructed of stone dust) will discourage fast riding. In particular, these paths will cause problems in wet weather, when puddling may occur.

Cyclepaths were assigned a speed of 15 kph: their surfaces are generally such as to permit higher speeds than the shared paths. Although pedestrians will wander onto these paths, a well designed cyclepath will have been laid out so as to avoid any obvious pedestrian desire line.

Links in cycle routes on the road were assigned a speed of 20 kph. Many cyclists will say that they can achieve a faster journey speed than this. However, in the absence of substantial surveys of cyclists' speeds on the road in the U.K., it was felt to be a reasonable average speed for utility cyclists on a level road.

In the Leicester model, roads are assumed to be free of any slower moving traffic (e.g. pedestrians, animal or farm traffic) which might cause serious delays to other traffic. Clearly this may not be true in all situations (for example, third world roads, with vehicles drawn by animals).

Adjustments to speeds

If a route was particularly hilly (i.e. if a link crossed two contours on the 1:25,000 map (i.e. a difference in height of 10m) then the speed assigned to that link was decreased by 5 kph)) That is, a speed of 15 kph was used as a proxy for the difficulty of getting up a hill on the road (such considerations do not usually apply to other types of links).

Provisional work on other speed adjustments, to simulate the effect of congestion, and of traffic on cyclists' perceptions of safety and intimidation, were also explored in this work. However, no firm conclusions were reached.

CONCLUSION

Modelling uses speed to calculate the likelihood that a motorist will take a particular route through a highway network. The evidence is that cyclists are also mainly concerned with the speed and length of their journey when choosing a route. Therefore it is considered that the modelling tools available to model motor traffic are valid for modelling cycling. However, to model cycling it is necessary to go into greater detail than in a motor model. Some of the reasons: in particular the variability of cyclists' speed, have been outlined here.

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MODELLING OF BICYCLE JOURNEYS : USING ENERGY EXPENDED RATHER THAN JOURNEY TIME OR DISTANCE

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ENGLISH MODELLING OF BICYCLE JOURNEYS : USING ENERGY EXPENDED RATHER THAN JOURNEY TIME OR DISTANCE.

In modelling methods for bicycle routes, distance is the most frequently used factor, but it must be realised that many other parameters are just as important, e.g. hills, road surface quality, loss of priority forcing the cyclist to stop. On a specific cycling itinerary, all these elements can be taken into consideration by measuring the rider's energy use.

To this end, we have created, in partnership with a high technology bicycle company, a hub able to measure the energy used by the cyclist. This method, focusing on the energy used and not on the journey length, can give town planners understanding of the behaviour of urban cyclists.

DEUTSCH MODELLIERUNG VON RADFAHRTEN: BERÜCKSICHTIGUNG DER AUFGEWANDTEN ENERGIE ANSTELLE DER FAHRTZEIT ODER ENTFERNUNG

Bei den Methoden zur Modellierung von Radrouten ist die Entfernung der am häufigsten verwendete Faktor, doch müssen wir uns vor Augen halten, daß viele andere Parameter wie beispielsweise hügeliges Gelände, die Beschaffenheit der Straßenoberfläche oder den Radfahrer zum Halten zwingender Nachrang genauso wichtig sind. Für eine bestimmte Radroute können all diese Elemente berücksichtigt werden, indem man den Energieverbrauch des Radfahrers mißt.

Zu diesem Zweck haben wir gemeinsam mit einem Hi-Tech-Fahrradhersteller eine Radnabe entwickelt, mit deren Hilfe wir die vom Radfahrer verbrauchte Energie messen können. Diese Methode, die sich auf die verbrauchte Energie und nicht auf die Länge der Fahrt konzentriert, kann den Städteplanern helfen, das Verhalten der Radfahrer in der Stadt zu verstehen.

SLOVENSKO MODELIRANJE KOLESARSKIH POTOVANJ: UPORABA PODATKOV O PORABLJENI ENERGIJI NAMESTO PORABLJENEGA ČASA ALI RAZDALJE

V metodah modeliranja kolesarskih potovanj je razdalja najpogostejše uporabljen faktor, vendar se moramo zavedati, da so enako pomembni tudi drugi parametri, npr. griči, kakovost cestne površine, izguba prednosti, ki prisili kolesarja da se ustavi... Na določenem kolesarskem odseku so lahko pri merjenju količine energije, ki jo porabi kolesar, upoštevani vsi ti elementi.

V sodelovanju s tehnološko visoko razvito družbo za izdelavo koles, smo razvili pesto za merjenje energije, ki jo porabi kolesar. Ta metoda, ki temelji na porabljeni energiji in ne na dolžini potovanja, lahko posreduje mestnim projektantom informacije o obnašanju kolesarjev v urbanih naseljih.

MODELLING OF BICYCLE JOURNEYS : USING ENERGY EXPENDED RATHER THAN JOURNEY TIME OR DISTANCE

With the continuing growth in car usage and the intense competition between different modes of transport it is of paramount importance to address the question of the efficiency of cycling, compared with other forms of transport. Pro-cycling policies need to do as much as possible to provide the cyclist with the shortest and safest possible route.

With this in mind, distance tends to be the most important factor in current cycle-way planning software. Efforts are made to reduce the number of breaks in the itinerary caused by major roads and rivers etc.but minimising the distance is always the main consideration.

However, distance is only one of the factors which influences the cyclist's choice of route. The studies which we have carried out in several French towns show that safety may be a criterion affecting the choice of route by a cyclist but most cyclists still prefer a more direct route even if there is a safer but less direct alternative.

Despite this, we regularly see that the shortest route is not always the most popular one, thereby making accurate traffic forecasts impossible.

Examining the situation more closely, it becomes obvious that other factors affect the speed, time and "enjoyability" of the journey :

- the number of times that the cyclist has to give way to other traffic, i.e. slow down ,stop, wait and set off again.
- the gradient, which may be of little importance in The Netherlands where this software is the most used, but which may be much more significant in French towns.
- the quality of the road or cycle-way surface which can vary greatly from one route to another.

After much thought, we have come to realise that the most pertinent parameter in explaining these variations is the energy used by the cyclist. This parameter takes into account at the same time :

- the gradient : the steeper the road, the greater the quantity of energy expended.
- the ride quality.
- the extra energy expended when the cyclist has to give way to other traffic.

To test these hypotheses, we have been working with MAVIC, the high technology, top of the range, French bicycle manufacturer. MAVIC has patented a wheel hub that calculates the cyclist's energy consumption by measuring the deformation of the rear axle.

Before looking at the results of our studies and their implications, a review of the physical parameters is necessary.

The power (P in Watts) used by the cyclist is the product of a force (F in Newtons) and a velocity (V in m/s).

$$P = \text{Force} \times \text{Velocity}$$

At constant velocity, four main forces are involved :

1. The aerodynamic force (F_{aero} which corresponds to the resistance to the cyclist's passage through the air)

$$F_{\text{aero}} = \frac{1}{2} r S C_x v^2 \text{ where}$$

r is the mass per unit volume of air (1.29 kg/m³)

S is the frontal surface area of the cyclist and his bike

C_x is the air resistance coefficient which depends on the position of the cyclist.

This factor, expressed as the square of the velocity, means that an urban cyclist travelling at 15 to 20km/hr will use four times less energy to overcome air resistance than a cyclist travelling at 30 to 40km/hr.

The wind is, obviously, a very important factor when calculating the aerodynamic force. A head wind or a tail wind can significantly alter the data.

2. Friction Force (F_{roul}) is related to the mass of the cyclist, to the coefficient of friction of the tyres on the asphalt and, therefore, to the quality of the tyres, the tyre pressure, the quality of the road surface and to friction in the wheel hubs.

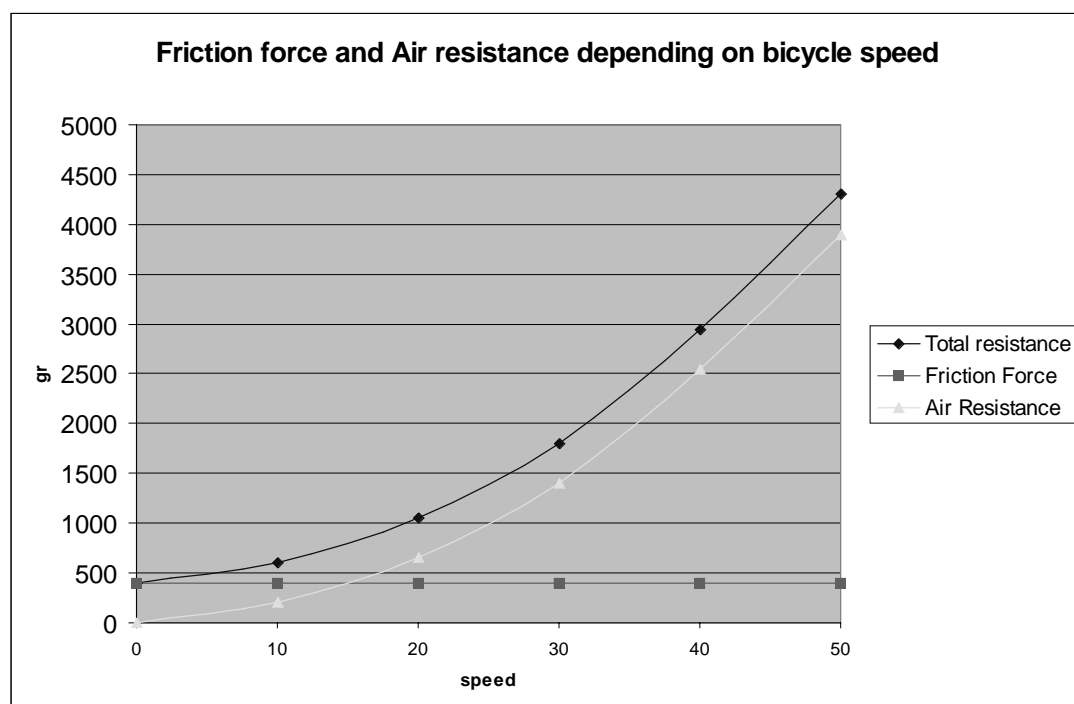
$$F_{\text{roul}} = mg.F_r \text{ where}$$

mg represents the weight of the cyclist and F_r the coefficient of friction. It is 0.00375 for a racing bike with high quality tyres, inflated to 6 bars, being ridden on a good quality surface.

INCLUSION : graph 1

Friction resistance does not depend on speed but on the quality of road

This force remains more or less constant, regardless of the speed of the bike, therefore at low speed, friction is, relatively, more of a handicap to the cyclist than at high speed. At 17km/hr, for a racing bike using high quality tyres, inflated to 6 bars, 50%



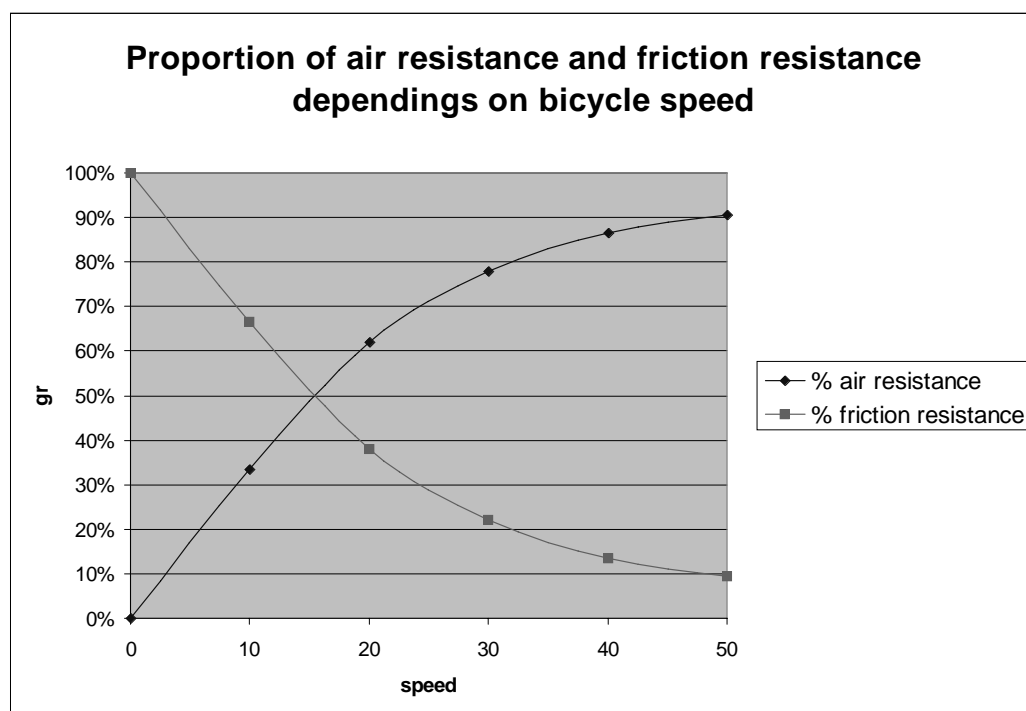
of the cyclist's energy is used to overcome air resistance and 50% to overcome friction. With a mediocre road surface and a poor quality bicycle, the amount of energy used to overcome friction can rise to 80%. The coefficient of friction can vary from 1 to 5, that is to say, at 17km/hr (the average speed of an urban cyclist), a poor ride quality can increase energy usage by 2.5 ! On the contrary, at 50km/hr, only 10% of the cyclist's energy is used to overcome frictional forces and 90% to overcome air resistance.

It is therefore possible to say that the ride quality of the road surface, correct tyre pressures and the weight and quality of the bicycle are very important factors in the energy consumption of an urban cyclist.

INCLUSION : graph 2

Fig 2 : Friction force and air resistance

Under 17km/hr (average speed of a majority of urban cyclists), friction force is more important than resistance of air. At a 30km/hr speed, air resistance is three times more important than friction resistance.



The ride quality of the surface a cycle-way is rarely considered : verges that are too high and encroach on the cycle-way, the presence of gravel on the surface, poorly repaired surfaces, drainage gratings that are either too low or too high and the use of too coarse grained an asphalt are among the factors which increase a cyclist's energy use considerably. Jointing and flatness are more important factors than roughness and texture of the road. A flat stabilised soil demands less energy expenditure than an asphalted one with bad repairs. It can be seen that we are not only talking about cycling comfort but also the efficiency of cycling compared with other modes of transport.

3. Weight (Fpoids) The cyclist must also overcome the resistance imposed by his/her own weight. The component of the weight which opposes the forward motion of the cyclist, is the component parallel to the road surface.

$F_{poids} = mg \cdot \sin \alpha$ (or percentage gradient)

With a power output of 400W, a cyclist will travel at 43km/hr on the flat and climb a 5% slope at 27km/hr.

4. The motor force, or F_e , is the force produced by the cyclist to overcome the other forces. The equilibrium of forces is expressed by the following equation :

$$M \frac{d^2x}{dt^2} = SF$$

$$= F_{poids} + F_{roul} + F_{aero} - F_e$$

$$= mg \cdot \sin \alpha + 1/2 \cdot r \cdot S \cdot C_x \cdot V^2 + mg \cdot F_r - F_e$$

or $d^2x/dt^2 = 0$ at constant velocity

Every time that a cyclist has to slow down or stop to give way to other vehicles, precious time is lost in deceleration and waiting but extra energy is also required to get back up to the initial speed.

In this way, at 25km/hr, a cyclist weighing 70kg using a racing bike weighing 10kg with high quality tyres, riding on a good quality surface, who has to stop at a junction will need to develop the following amount of energy :

$$E = 1/2 m V^2 = 0.5 \times 80 (25/36)^2 \text{ the velocity being measured in m/s}$$

$$= 1929 \text{ joules}$$

As the average energy consumption of a cyclist is 100W at 25km/hr, each time he/she is required to stop at a junction, he/she losses the energy required to cycle 139m.

In terms of energy consumption we can conclude that :

Each loss of priority at a junction "increases" the journey by 139m.

In such a way, it is much easier to understand why cyclists often :

prefer to follow a busy road, where they always have right of way, to a safer alternative route that involves losses of priority.

don't use dedicated cycle-ways that involve several losses of priority.

ignore red lights or stop signs.

In conclusion, it can be seen that the study of energy use in cycling has taught us two major lessons :

The ride quality is particularly important in terms of the efficiency of a cycle journey in a town, at moderate speeds, and even more so for slower cyclists. It is not only a question of comfort in the way we think of comfort for a car seat.

Losses of priority are a major problem for urban cyclists. The energy efficiency of a cyclist, especially if they are cycling fast, is significantly reduced on routes where they are regularly required to give way to other traffic and thereby lose kinetic energy.

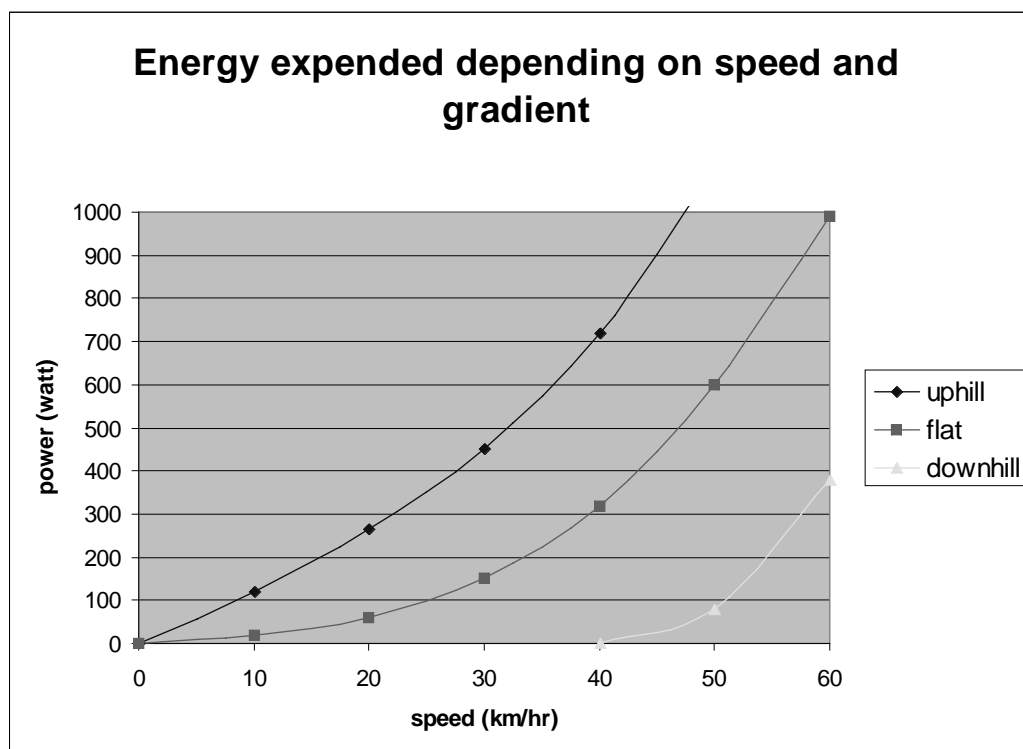
Relief can also be a handicap. Without being able to give precise information, we can say that significant climbs will reduce cycle-way popularity. The choice of route should, therefore, take into consideration differences in relief.

INCLUSION / Graph 3 :

Fig 3 : energy and gradient (5%)

With a 5% gradient, the energy expended is twice more important going uphill at a 10km/hr speed than at a 20km/hr when the road is flat.

The main advantage of this energy analysis approach is that it allows these parameters to be considered together. We have field tested this method to calculate the energy requirements of different routes. Methodological problems are mainly due to difficulties in controlling other variables which can affect the calculations, particularly speed, relief and acceleration. Tests have to be carried out at a constant speed of 20km/hr with constant rates of deceleration and acceleration.



Preliminary results have been interesting. By integrating a large number of variables, we have gained a much better understanding of why cyclists prefer some routes over others. These results remain experimental and have not, as yet, been extended to a wider range of situations. We are, therefore, open to discussion with anyone who has worked on cycle-way modelling or who is interested in the energy use approach.

BIKEWAYS PLANNING SYSTEMS AS AN ELEMENT OF EDUCATION IN TRANSPORTATION KNOWLEDGE OF STUDENTS OF ARCHITECTURE FACULTY

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BIKEWAYS PLANNING SYSTEMS AS AN ELEMENT OF EDUCATION IN TRANSPORTATION KNOWLEDGE OF STUDENTS OF ARCHITECTURE FACULTY

In this paper are presented the method and results of education of students II course of Architecture Division in the Faculty of Building, Architecture and Environment Engineering of Lódz University of Technology in their learning transportation by project of bikeways system. Transportation problems are basic and integrated elements of professional education of future architecture and urban planners. During summer semester of 1997/1998 author implemented the project of bikeways system into program of workshops for the students. In the experimental program have participated 26 students, which elaborated project of bikeways system of Lódz and to Plock. Results of experiment with bikeways planning network discussed above gave to author of this paper professional and pedagogical satisfaction.

RADWEGEPLANUNGSSYSTEME ALS EIN AUSBILDUNGSELEMENT FÜR ARCHITEKTURSTUDENTEN ZUR VERMITTLUNG VON WISSEN IM VERKEHRSBEREICH

In diesem Referat werden die Methoden und Resultate der Ausbildung von Studenten im II. Abschnitt des Architekturstudiums an der Fakultät für Bauen, Architektur und Umwelttechnik der Technischen Universität von Lodz präsentiert, die mit einem Radwegeprojekt gearbeitet haben. 1997/98 wurden 26 Studenten in kleine Gruppen zu je 3 oder 4 Personen eingeteilt, die Projekte für bestimmte Stadtteile von Lodz (800 000 Einwohner) und Plock (120 000 Einwohner) erarbeiteten. Vom pädagogischen Standpunkt aus wurden didaktische und professionelle Zielsetzungen erfüllt, und das präsentierte Projekt kann als sehr interessant eingestuft werden. Die Ausbildung von Architekturstudenten im Bereich Verkehrswesen vermittelt der Planung von Radwegesystemen ist ein sehr guter Ansatz und bietet den Studierenden die Möglichkeit, vielfältige Einblicke zu gewinnen:

- über die Interaktion zwischen Landnutzung und Verkehrssystem
- über Lokalisierung und spezifische Charakteristika der Fahrradinfrastruktur im öffentlichen urbanen Raum
- über verschiedene Bedingungen, die in Städten die Verkehrs- und Fahrradverkehrsplanung beeinflussen.

SISTEMI NAČRTOVANJA KOLESARSKIH STEZ, KOT ELEMENT IZOBRAZBE V ZNANJU PROMETA ŠTUDENTOV NA FAKULTETI ZA ARHITEKTURO

V prispevku so predstavljene metode in rezultati izobrazbe študentov Arhitekturnega oddelka na Fakulteti za gradnjo, arhitekturo in okoljsko inženirstvo v Lodzu.

26 študentov je bilo leta 1997/98, razdeljenih v majhne skupine (3-4 osebe), ki so izdelovale projekte za posamezne mestne četrti Lodza (800.000 prebivalcev) in Plocka (120.000 prebivalcev). S pedagoškega stališča lahko didaktiko in strokovni namen izpeljave in predstavitve poskusa ocenimo kot zelo zanimivo. Izobraževanje študentov arhitekture v znanju prometa z načrtovanjem kolesarskih stez je dobra oblika in daje možnost sledečega znanja:

- medsebojno vplivanje uporabe zemljišča in sistema prevozov
- prostor in specifičnost kolesarske infrastrukture na javnih urbanih območjih
- različne okoliščine, ki vplivajo na promet in sisteme kolesarskega načrtovanja v mestih.

ENGLISH

DEUTSCH

SLOVENSKO

BIKEWAYS PLANNING SYSTEMS AS AN ELEMENT OF EDUCATION IN TRANSPORTATION KNOWLEDGE OF STUDENTS OF ARCHITECTURE FACULTY

1. INTRODUCTION

In this paper are presented the method and results of education of students II course of Architecture Division in the Faculty of Building, Architecture and Environment Engineering of Łódź University of Technology in their learning transportation by project of bikeways system. Transportation problems are basic and integrated elements of professional education of future architecture and urban planners. During summer semester of 1997/1998 author implemented the project of bikeways system into program of workshops for the students who were declared a desire to fulfil other subject of design exercise than traditional. In the experimental program have participated 26 students, which elaborated project of bikeways system of Łódź and small group of 4 students which made the same subject to Plock that it could be facilitation for them.

It must be note, that:

- Łódź is a agglomeration in the centre of Poland where live 800 000 inhabitants and developed on the turn of 19th century and planned in typical of rectangular schedule. A bicycle infrastructure is composed of limited numbers of streets equipped with bikeways /to Lagiewniki Forest and to Pabianice/. There is also the large pedestrian zone in central part of Piotrkowska Street /main street/, where bicycle traffic is permitted;
- Plock is an very famous historical town situated in Mazovia Region /80 km from Łódź and 100 km from Warsaw/ where live 120000 inhabitants. Situation with bicycle infrastructure is quite similar to Łódź. Only few sections of streets equipped with bikepaths or bike lanes exist in the town, but they don't create of bikeways network.

2. AIMS, METHODS AND SCOPE OF TRANSPOTRATION KNOWLEGE IN ARCHITECTURE AND URBAN PLANNERS IN ŁÓDŹ UNIVERSITY OF TECHNOLOGY

Education in transportation knowledge in Architecture and Urban Planning Section of Łódź University of Technology is conducted since II course in subject "Transportation", This subject includes 15h of lecture and 30h of design exercises. During participation in this classes student must obtain knowledge of the principles and bases of transportation and highways engineering.

Traditional range of exercise of transportation conducted by author of this paper concerns to project of transportation networks in part of town, as well as an inhabitant zone. Student's task is the elaboration of modernization of transportation system to assigned conditions. He should solve: highways network, with classification of the streets, project of stretch of street, typical sections with characteristic equipment and project of pavement, parkings and garages networks, bikeways and pedestrians networks, service of public transport /itinerary and stops networks/ as well as a concept of modernization of selected intersection. Designing of bicycle infrastruture in program for all students, is only a one element of exercise and it is not main subject.

This knowledge is a basis to active application of transportation solution in other specialistic subjects, for example: in urban planning, architecture or regional planning, as well as diploma work, where transportation knowledge is integrated with another aspects of urban and architecture planning and in differents scale /region, agglomeration or quarter of the town/ Transportation systems is an element of urban space and simultaneously it is an creative element of this space, that why it is very important part of education of future architecture and urban planner. In author's opinion program of introduction to transportation education should be complexed and relatively simple to understand. The simplicity means presentation of the principle elements of transportation systems and interactions between this elements.

Complexity means presentation to students:

- interdependence between transportation system and land use,
- role of transportation policy in urban planning policy,
- function of different urban transportation subsystems;
- demands of different transportation modes in the traffic and in the rest, as well as in relation into passengers and goods modes;

- modal split,
- role of different category of urban arterials and urban streets in the urban highways network and in the urban spatial structure.

It is worth to mention that Architecture and Urban Planning Section in LUT is a one of not many of polish architecture faculties, where subject "transportation" is obligatory in students education. For example to Faculty of Architecture in Warsaw University of Technology Transportation is a facultative course, selected by students, at the last year of the studies, only 1 h per week /15 total/.

In author's opinion including methodology of bikeways planning system in the educational process of students of architecture and urban planning is a very good didactic instrument, which gives the following possibilities of knowledge of:

- interaction between land use and transportation system;
- structure and conditions of work and development of transportation system in the agglomeration and towns;
- the role of different transportation mode in service of towns;
- design of particular solutions of intersections and sections between intersections equipped in bicycle infrastructure;
- traffic calming solution in urban areas.

3. AIMS, METHODS AND SCOPE OF EXPERIMENTAL EXERCISE

Students working in Łódź area were divided into small groups /3-4 persons/, which elaborated projects to particular quarters of this agglomeration. Group of Plock designed the bicycle network in all town. It must be noted, that all participants of experimental were inhabitants of the towns where they worked. They were active bike users in majority, too.

General purpose of executive exercise was elaboration of bikeways network in the town to existing stage of development of spatial structure and transportation system with selected detailed solutions of it's elements.

Scope of exercise was following:

- inventory of transportation network and urban functional space with evaluation of possibilities to create of bikeways network along the streets or crossing green zones,
- identification of principals places of sources and purposes of bicycle trips,
- identification of bicycle traffic model elaboration of desired lines,
- elaboration of bikeways model network,
- elaboration of bikeways network in the town, with classification of design network, according to types of bicycle routes,
- elaboration of specification of length by bikeway types and coefficients describing of designed network,
- elaboration of proposition of partial realisation of bikeways network,
- elaboration of schemes of situation plans of intersection before and after implementation of bicycle infrastructure, with conception of vertical and horizontal traffic organisation,
- elaboration of schemes of typical normal sections in the sections between of intersections before and after implementation of bicycle infrastructure;
- elaboration of elements of equipment of bikeways network, as parking elements, racks, schedules, directional signs and others elements of small architecture.

Inventory of transportation network and urban spatial functions, as well as analyses of plan of the town were generally principal sources of data of existing stage. Students made photoinventory to obtain data concerning of length of streets between building lines, length of existing walkways, carrigeways, green space, etc. Function and classification of streets network were taken from by Urban Master Plan of Town or other specialistic documents concerned transportation system. On the base of data of the same documents and on the base of own observations traffic conditions of traffic - road /volume of traffic and medium speed of traffic/ were evaluated and segregation or integration of bike and car traffic were decided. Characteristics of length and segregation space using of normal section have gave opportunities to estimate the type and localisation of bicycle ways. This method was used in Łódź.

Methodology applied in Plock was more complexed. Students obtained from Municipality results of survey of traffic volume and structure as well as data concerning of traffic safety /killes, injuries and accidents according the streets and type of accidents/. Therefore more detailed analyses of road and traffic conditions were accomplished in Plock.

Projects were elaborated in following spatial scale:

- master plan of bikeways network: - in Łódź 1:20000 /1:25000/ and in Plock 1:10000;
- schemas of modernisation of intersections 1:500;
- schemas of modernized sections: 1:100.

4. EFFECTS OF EXPERIMENTAL EXERCISE

Generally all effects of presented experiment can be estimated as very good. Experiment provided very interesting results. Students elaborated preliminary projects of bikeways systems to Łódź and to Pock /correspondingly 300 km and 60 km of length of different types of bikeways, as well as 60 and 30 of intersections and normal sections (before and after)/. Selected graphical results are presented in fig. 1-3. Participants of experiment were very engaged in their work, because projects were practical, necessary and utilisable to development of bikeways systems in these mentioned towns. Effects of experiments can be evaluated in two aspects: professional - engineers and urban planners and pedagogical. From professional - engineers and urban planners point of view, students have known:

- a new part of urban planning knowledge,
- a new domain very applicable in future professional live. They had possibilities to know professional literature concerning transportation system /author offered facilities of volumes of Velo-City Conferences, too/. They elaborated projects at good professional level that can be submitted to Municipal Authority, as a presentation of possibilities of development of bikeways network in mentioned towns.

From pedagogical point of view didactics purposes were obtained too. Only two teams doesn't finish your job however they will continue it this year. Students had possibilities to learn collectivity and co-ordination of work between different teams, while are important skills for the future architects and urban planners. Collective work gives the possibilities to learn the comradeship and friendship. During fulfilling of inventory of urban space, they had possibilities to know better their own towns, as well green zones and urban structure. They improved their capacities of application of computer technic as well as manual drawing and photo capacities.

In the author's opinion using methodology of bikeways planning system in the educational process of students of architecture and urban planning is very good didactic instrument, because it gives following knowledge:

- elasticity of bikeways planning itinerary in urban space is a mean of better performance of duty of different elements of land use,
- needs of transportation service by different transportation means and by bike as well.
- design of bikeways systems as an element of ecological education and formation of mentality of sustainable development of future architects and urban planners.

For Author of this paper above experiment was a good occasion to hand over a part of own experiences concerning of transportation planning in agglomeration and designing of bicycle infrastructure to young colleagues.

In the part of tutor, this experiment required:

- professional and methodological capacities of "bicycle infrastructure" problems,
- preparing of essential materials,
- permanent supervision of teams design;
- permanent co-ordination between teams and learning students of this skill.

It has to be noted that the results of experiment would be presented to local authorities soon. This should inspire to the rapid development of bikeways infrastructures of these urban areas.

5. CONCLUSION

Results of experiment with bikeways planning network discussed above gave to author of this paper professional and pedagogical satisfaction. Exercise aroused interest to students as well as to tutor. Students surprising developed new ideas and correctness of designing. In this year described above experiment is continued with new students. More tasks are turned to traffic calming zones and itineraries.

Let's hope that students will appreciate a bike as a mean of transportation service in different types areas and public zones during future studies and own professional activities.

THE STATUS OF THE BICYCLE IN THE EDUCATION OF TRANSPORT EXPERTS AT UNIVERSITIES

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THE STATUS OF THE BICYCLE IN THE EDUCATION OF TRANSPORT EXPERTS AT UNIVERSITIES

Cycling is considered an eco-friendly mode of transport. Transport planning on all levels favours cycling as a possibility of coping with high traffic volumes in the future - especially in urban areas.

Transport professionals can excel in the promotion of cycling only if they have profound knowledge of it - the result of a good university education. Therefore it is very important to research the status of the bicycle in university education. This paper presents a study conducted on the level and quality of bicycle-related educational programs and projects at various universities.

The results correspond to some degree with mobility patterns known from other surveys: All countries where the status of the motorised traffic is very firm (USA, Canada, but also Mediterranean Europe) reported that bicycle traffic is not a big issue and consequently not well represented in the teaching structure of their universities.

One conclusion is that bicycle-related education at these universities should be improved.

ENGLISH

RADVERKEHRSRELEVANTE LEHRINHALTE IN DER AUSBILDUNG VON VERKEHRSEXPERTEN AN UNIVERSITÄTEN

Radverkehr wird als umweltverträgliche Mobilitätsform anerkannt. Verkehrsplanung auf allen Ebenen betrachtet den Radverkehr als eine Möglichkeit, mit den zukünftig - vor allem in urbanen Gebieten - zu erwartenden großen Verkehrsmengen fertig zu werden.

Verkehrsexperten können die Förderung des Radverkehrs nur dann vorantreiben, wenn sie über die entsprechenden Kenntnisse verfügen; diese sind das Ergebnis einer profunden Hochschulausbildung. Es ist daher wichtig, Qualität und Umfang der radverkehrsrelevanten Lehrinhalte in der Ausbildung von Verkehrsexperten an Universitäten zu untersuchen. Dies ist der Inhalt einer Studie, welche die Grundlage für diesen Artikel bildet.

Die Ergebnisse stimmen teilweise gut mit Mobilitätsverteilungen überein, welche aus anderen Studien bekannt sind. Länder, in denen der motorisierte Verkehr dominiert (USA, Canada oder einige europäische Mittelmeerstaaten) antworteten in der Befragung, daß Radverkehr kein wichtiges Thema sei und daher auch kaum in den Lehrveranstaltungen präsent wäre.

Eine Schlußfolgerung ist, daß die radverkehrsrelevante Ausbildung an Universitäten in solchen Ländern verbessert

DEUTSCH

POLOŽAJ KOLESA V IZOBRAZBI PROMETNIH STROKOVNJAKOV NA EVROPSKIH UNIVERZAH

Kolesarjenje velja za ekološko prijazni način prevoza. Načrtovanje prevozov je na vseh nivojih naklonjeno kolesarjenju, kot možnosti za obvladovanje visokega obsega prometa v prihodnosti - posebej na urbanih področjih. Načrtovanje infrastrukture za kolesarje in organizacija reklamnih kampanj, ki so potrebne za doseganje pomembnega vzpona kolesarskega prometa, so zelo zahtevne naloge.

Prometni strokovnjaki se lahko izkažejo na svojem področju le, če imajo temeljito znanje, ki je rezultat dobre univerzitetne izobrazbe. Zaradi tega je pomembno raziskati položaj kolesa v univerzitetni izobrazbi.

Prispevek predstavlja proučevanje, ki temelji na nivoju in kakovosti s kolesom povezanih izobraževalnih programov in projektov na različnih evropskih univerzah.

SLOVENSKO

THE STATUS OF THE BICYCLE IN THE EDUCATION OF TRANSPORT EXPERTS AT UNIVERSITIES

1 INTRODUCTION

Cycling is considered an eco-friendly mode of transport. Transport planning on all levels favours cycling as a possibility of coping with high traffic volumes in the future - especially in urban areas. Planning the infrastructure for cyclists and organising the promotion campaigns necessary to achieve a significant rise in bicycle traffic are very demanding tasks. Transport professionals can excel in their field only if they have profound knowledge of it - the result of a good university education. Therefore it seemed important to research the status of the bicycle in university education.

2 SURVEY

Two questionnaires were sent to the participating institutes.

Questionnaire A asked for general data, e.g. country, university, institute, contact person and addresses.

Questionnaire B asked for a detailed description of each specific activity (lecture, course, seminar, exercise, etc.):

- 1) in which major field(s) of studies was the activity integrated?
- 2) how much time was used for the activity in total and what part of it (hours or %) was used for bicycle-related topics?
- 3) which topics from a given list were dealt with in this specific activity and how much emphasis was put on them?

3 TARGET GROUP AND RESPONSE RATES

This study analyses the level and quality of bicycle-related educational programmes and projects at various universities. Most of the contacts were with European universities as the data exchange was easier and the addresses were available. The contacts were made preferably via e-mail. We tried to contact individual university teaching-units which are addressed as "university-institutes" or "institutes" in the study.

Note that for some regions (North America, Australia, Mediterranean Europe) the numbers of contacted/responding university institutes were quite small and that the results have to be regarded with caution. There were no responses from Asia at all.

The different institutes which were contacted were originally divided into four regions, Europe was subdivided into four regions. This arrangement was made only for better data evaluation, not at all for political or other reasons (Table 1). The emphasis of the study was on Europe, and the other regions were added to allow a glimpse at university education in overseas-countries.

FRIDAY

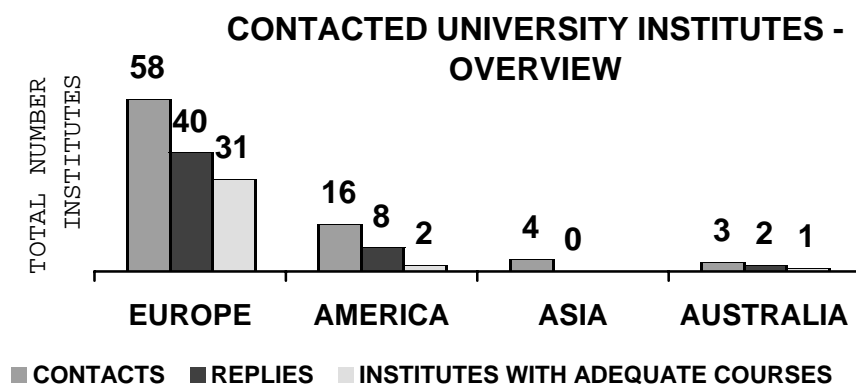


Figure 1: Contacted university institutes in Europe, America, Asia and Australia: Numbers of contacted institutes, numbers of replying institutes, and numbers of institutes with adequate lectures and courses

n = 81

"Region"	Countries in this region
America	Canada, (Chile), USA
Asia	(China, Japan, India, Israel)
Australia	—
Eastern Europe	Czech Republic, Estland, Hungary, Lithuania, Poland, Slovak Republic
Northern Europe	Belgium, Denmark, Finland, Netherlands, Norway, Sweden, United Kingdom
Middle Europe	Austria, Germany, Switzerland
Mediterranean Europe	(Croatia), France, Greece, Italy, Portugal, Slovenia, Spain

Table 1:

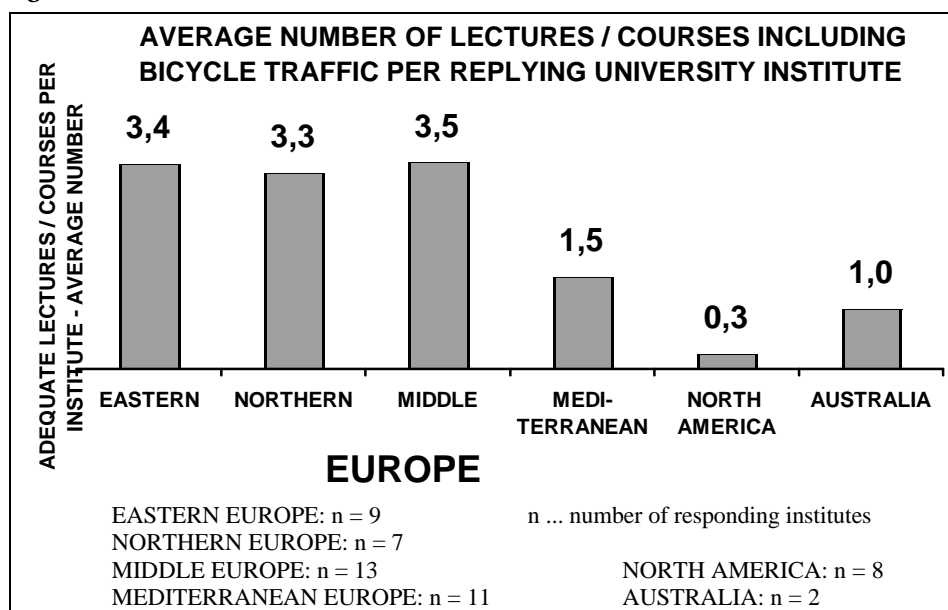
Overview of the different areas and European regions as defined in this study. (From countries in brackets not even one university institute responded).

4 RESULTS

4.1 PROPORTION OF BICYCLE-RELATED LECTURES AND COURSES

The average numbers of lectures and courses per replying institute are shown in Figure 2.

Figure 2:



Average numbers of lectures and courses containing bicycle traffic per responding university institute

Northern, Middle and Eastern Europe have almost the same number of lectures / courses per responding university institute (3.3 to 3.5), in the Mediterranean region this figure drops to less than 50% of the other European regions (1.5).

Still lower figures apply for Australia (note that the figures are very small, so this might not be the true proportion). The lowest average numbers of bicycle-related activities were found at North American universities (0.3 per institute). The number of responding North American institutes was 8, the same as for Eastern or Northern Europe, so that this result seems to be quite solid. This means that institutes from most European regions offer their students ten times more possibilities to study bicycle traffic than North American universities.

The numbers of lectures and courses from North America and Australia are much too small to allow any further detailed analyses in the following part of the survey.

4.2 TIME/EFFORT SPENT ON BICYCLE-RELATED TRAFFIC

568 The numbers

of lectures and courses can be classified according to the individual time spent on bicycle-related issues. This results in different patterns for the four European regions.

Northern, Middle and Mediterranean European universities spend an average time of 8.1, 10.9 and 8.3 hours respectively on "bicycle-traffic related topics" per lecture or course, whereas Eastern European institutes spend only an average time of 4.4 hours per lecture / course.

4.3 OTHER RESULTS

- Fields of transport studies concerned with bicycle traffic
- The names of the activities reported by the different institutes were assigned to different fields of transport studies. Bicycle-related topics are covered in most of the transport fields. Emphasis (time spent on bicycle-traffic-related issues per lecture or course exceeding 30% of the total time of the lecture) is laid on bicycle traffic only in fields of "non-motorised traffic", rarely in "transport planning" and not at all in the rest of the fields.
- Different bicycle-topics included in the lectures and courses
- Persons completing the forms had to choose whether the lecture, course etc. dealt with in this form included a number of pre-set topics or not. Then they had to decide, if it was a main focus (emphasis) or only mentioned (covered).
- Time dedicated to bicycle traffic in compulsory or elective lectures and courses
- Most compulsory courses include bicycle-related topics for less than 25% of the total lecture time. Only a few elective lectures etc. are found in this category. Electives are also found in the categories of 26% to 50% and higher, presumably as special lectures focusing on bicycle traffic, whereas no compulsory lectures are found in categories with lecture-time of more than 50% dedicated to bicycle traffic.
- Target groups of lectures and courses
- The target groups of the lectures and courses fostering bicycle traffic are mainly planners (86%), the rest are "non-planners". These two groups contain students from the following fields:
- Planners: transport, civil engineering, regional planning, environmental engineering, cultural engineering, architecture
- Non-planners: geography, economics, computer sciences, mechanical engineering

5 MODAL SPLIT

It might be interesting to compare the different efforts in the fields of education at university-level concerned with bicycle-traffic-related topics to mobility behaviour.

When the modal split of the USA (0.9% bicycle traffic) is compared with a European modal-split (i.e. from Austria, 5.7% bicycle traffic) the question arises whether the predominance of the motorised traffic in the USA influences the educational patterns at universities, where bicycle-related topics are almost not included, or vice versa (see Figure 2).

6 CONCLUSIONS - RECIPES FOR BETTER BIKING-CONDITIONS IN THE FUTURE

Minimum requirements of university education for transport planners are needed. In an information campaign, e.g. a brochure could be sent to all universities with the corresponding profile (transport studies), recommending the minimum requirement for the education of a transport professional and a list of the essential topics, which should be taught at university level in transport.

We assume that cultural differences as well as language problems and small data samples contribute to some results that are rather hard to explain.

However, some results fit well into mobility patterns known from other surveys: All countries where the status of the motorised traffic is very firm (USA, Canada, but also Mediterranean Europe) reported that bicycle traffic is not a big issue and consequently not well represented in the teaching structure of their universities.

GETTING RESEARCH RESULTS INTO PRACTICE

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GETTING RESEARCH RESULTS INTO PRACTICE

With the race on in the UK to double cycling by two by the year 2002 and again by the year 2012, a key concern has been how to ensure that the latest findings from research are adopted by cycling practitioners. This paper draws on the work to support the development of the UK National Cycling Strategy, the emerging Strategy for Walking, and research projects that have been identified. In parallel, the UK National Health Service (which spends around £400m per year) has recently commissioned research in priority areas that should lead to more effective transfer of research results into practice. Lessons from this approach might be transferred to the transport sector and matched to professional needs in cycling.

DIE PRAKTISCHE UMSETZUNG VON FORSCHUNGSERGEBNISSEN

Angesichts des ehrgeizigen Planes Großbritanniens, den Fahrradverkehr bis 2002 zu verdoppeln und bis 2012 noch einmal zu verdoppeln, besteht eines der Hauptanliegen darin, sicherzustellen, daß die neuesten Ergebnisse der Forschung im Bereich des Fahrradverkehrs auch in die Praxis umgesetzt werden. Dieses Referat befaßt sich mit den Maßnahmen zur Unterstützung der britischen National Cycling Strategy, der im Entstehen begriffenen Strategy for Walking und konkreten Forschungsvorhaben. Parallel dazu, hat der britische National Health Service (der jährlich Ausgaben in der Höhe von etwa 400 Millionen Pfund tätigt) kürzlich Studien in Prioritätsbereichen in Auftrag gegeben, die zu einer effizienteren Umsetzung von Forschungsergebnissen in die Praxis führen sollen. Die Lehren, die man aus diesem Ansatz zieht, könnten auf den Verkehrssektor umgelegt und auf die Bedürfnisse im Bereich des Fahrradverkehrs umgemünzt werden.

UPORABA REZULTATOV RAZISKAV V PRAKSI

S tekmovanjem za podvojitev kolesarjenja do leta 2002 in ponovno podvojitev do leta 2012 v Veliki Britaniji, je naša glava skrb, kako zagotoviti da bodo strokovnjaki za kolesarjenje ugotovitve zadnjih raziskav prilagodili v praksi. Ta prispevek temelji na trudu za podporo razvoja Nacionalne kolesarske strategije, nastajajoče Strategije za hojo in identificiranih raziskovalnih projektov. Vzporedno s tem je Nacionalna zdravstvena služba Velike Britanije (ki porabi okoli 400 milijonov funtov letno) pred kratkim odobrila raziskavo na prioritetnih področjih, ki naj bi vodila k bolj učinkovitemu prenosu rezultatov raziskav v prakso. Lekcije tega pristopa so lahko prenesene v prevozni sektor in prilagojene profesionalnim potrebam v kolesarstvu.

ENGLISH

DEUTSCH

SLOVENSKO

GETTING RESEARCH RESULTS INTO PRACTICE

Introduction: With the race in the UK to double cycling by the year 2002 and double it again by the year 2012, a key concern has been how to ensure that the latest findings from research are adopted by cycling practitioners. A substantial number of research results on cycling topics have been published over the last few years in the UK (Department of Transport (DoT) 1997). The Department of the Environment, Transport and the Regions (DETR) publishes Traffic Advisory Leaflets and Local Transport Notes which in the UK are an important way by which Local Authorities take up research findings. The Department spent £1.4m on 6 cycling research projects completed in 1997/98 alone. It is difficult to measure the extent to which research findings are used by professional staff in local authorities and consultancies in creating facilities or in promoting cycling. Research findings might not be taken up more thoroughly by practitioners for a number of reasons, possibly including wrong media format, cost barriers, unclear messages and recommendations not brought together in a coherent way for users. Yet if objective results are not acted on at this crucial stage of aiming for the cycling targets, then they might not be met and our communities could be left with a legacy of inadequate infrastructure for cycling. The outcome might be that cycling in the UK would not increase.

Background: In July 1998 the government published its White Paper on Integrated Transport (DETR 1998). This introduced and endorsed a Commission for Integrated Transport, a Strategic Rail Authority, Bus Quality Partnerships and Local Transport Plans. Local Transport Plans give authority to the strategies developed for cycling and walking, and their targets, and underline that the government expects better provision for these modes. Increased funding will be available for cycling, walking and public transport including funding from new tools - road user charging and levies on workplace parking.

This paper draws on the work to support the development of the UK National Cycling Strategy (DoT 1996) which was launched in 1996. Developing the strategy involved a wide range of players, including voluntary organisations, businesses, local authorities and Government and the resulting document was a broad consensus of all parties. It aims to establish a culture which favours the increased use of bicycles and seek out innovative means of fostering accessibility by cycle. The Strategy stresses the importance of action by a wide range of potential providers, encouraging them to set local targets and objectives that can contribute to the national aspiration. A National Cycling Forum oversees the implementation of the National Cycling Strategy. It co-ordinates the contributions of working groups that take up detailed aspects of the strategy. In the first year, groups covered Key Strategic Outputs, Cycle Security, Marketing, Intermodality, Heavy Goods Vehicles and Cyclists, Cycling and Road Safety, and Best Practice.

In a similar initiative, a national strategy for walking has been developed over the last two years and, following a consultation exercise, its publication is expected in 1999 (DOT 1996). A joint working group reporting to both the National Cycling Forum and the Walking Steering Group examined the information and training needs for professional staff working on cycling and walking. Its members plan to issue a questionnaire to assess the likely market for vocational training in skills for the development of cycling and walking. The group have taken up an opportunity join a parallel venture to conduct research to determine the requirements of small consultancies, and they also have produced a list of publications on the planning and design of infrastructure and the promotion of cycling.

The group recognised that it is not easy to evaluate objectively the impact of individual research results on individual professional staff or schemes. New research reports are, of course, rarely published to coincide with an individual person's needs when they are designing a new cycling scheme! The longer the interval between research results being published and the need in a design office to use such results, the harder it is to be certain about the impact of research results.

One proposal from the joint working group is for a programme research to be conducted into how research could be better introduced into practice. The idea was agreed following an evaluation exercise to determine the impact of research in the National Health Service (NHS) (Department of Health 1995).

National Health Service Research: The UK NHS spends around £400m per year. In 1994 a multi-disciplinary, expert advisory group was set up to evaluate ways of promoting the implementation of research. The group conducted a wide-ranging consultation, and a targeted supplementary exercise, held 4 workshops and commissioned expert papers. They identified 20 topics evaluating methods of increasing the uptake of research findings. In 1995 the National Health Service issued a first call for proposals for research into these 20 priority areas

PRIORITY AREAS FOR HEALTH

1. The principal sources of information on health care effectiveness used by clinicians.
2. The influence of source and presentation of evidence on its uptake by health care.

3. The management of uncertainty and communication of risk by clinicians.
4. Roles for health service user groups in implementing research.
5. Why some clinicians but not others change their practice in response to research findings.
6. The role of commissioning in securing change in clinical practice.
7. Professional, managerial, organisational and commercial factors associated with securing change in good practice, with a particular focus on trusts and primary care providers.
8. Interventions directed at clinical and medical directors and directors of nursing in trusts to promote evidence based care.
9. Local research implementation and development projects (such as GRiPP).
10. Effectiveness and cost-effectiveness of audit and feedback to promote implementation of research findings.
11. Educational strategies for continuing professional development to promote the implementation of research findings.
12. Effectiveness and cost-effectiveness of teaching critical appraisal skills to clinicians, patients/users, purchasers and providers to promote uptake of research findings.
13. The role of undergraduate (pre-qualification) training in promoting the uptake of research findings.
14. The impact of clinical practice guidelines in disciplines other than medicine.
15. Effectiveness and cost-effectiveness of reminder and decision support systems to implement research findings.
16. The role of the media in promoting uptake of research findings.
17. Impact of professional and managerial change agents (including educational outreach visits and local opinion leaders) in implementing research findings.
18. Effect on evidence-based practice of general health policy measures.
19. The impact of national guidance to promote clinical effectiveness
20. The use of research-based evidence by policy-makers.

The first call resulted in 1200 requests for further information and these were split into short applications and outline applications. They were assessed through peer review and by a commissioning group to determine which should be re-submitted or short-listed. Following a sift that produced 69 full applications, 32 projects were funded at a total cost of £4m. (NHS Executive 1997). Not all the priority areas were covered and a second call was made in 1997 when a further 3 projects were included. Results have been drawn together and are not only relevant to the medical field but also of general interest to this topic (Donald 1998).

Transport Research: Although only a few results might be pertinent to the traffic and transportation field, it might be possible to adapt the methodology used and the priority areas from the NHS study to traffic and transportation. It would have to be recognised from the start that there is not always a good match between the health and transport domains. However, to explore the feasibility of adopting such an approach, the priority areas for health have been converted to matching areas for traffic and transport. Similar areas have been grouped together for ease of reference and are listed below. The intention is that lessons from adopting this approach will not only generate insights to the traffic and transport sector, but also provide benefits professional needs in cycling and walking.

POSSIBLE PRIORITY AREAS TO RESEARCH IN TRAFFIC AND TRANSPORTATION

With and without Sources

1. The principle sources of information on best practice used by practitioners.
2. The influence of sources, and presentation, of research results on its uptake by traffic and transport professionals including engineers, technicians, planners, architects, etc. Also between these groups.
3. The management of uncertainty and communication of risk by practitioners in the absence of research results being available.
4. Why some practitioners but not others change their practice in response to research findings becoming available.

The Players

5. The different roles that different road user groups have in the research cycle.
16. The role of the media in promoting the uptake of research findings.
20. The use of research based evidence by policy makers at local and national levels.
17. Impact of professional and managerial change agents (including educational links and local opinion leaders) in implementing research findings.

The Methodology

7. Professional, managerial, organisational, and commercial factors associated with securing change in good practice with a particular focus on different players.
10. Effectiveness and cost effectiveness of audit and feedback to promote implementation of research findings.
15. Existence, effectiveness and cost-effectiveness of reminder and decision support systems to implement research findings.

Specific Actions

6. The role of (direct) commissioning [with local authorities / others] in securing change in current practice.
8. Interventions directed at all professional directors and policy makers at local and national levels to promote research based practice.
9. Local research trials or development projects - their scope, objectivity, reliability.

Guidance

18. Effect of general transport policy measures on evidence-based practice.
19. The impact of national guidance to promote best practice effectiveness.
14. The impact of best practice guidelines in disciplines other than traffic and transport professionals, including engineers, technicians, planners, architects, etc; and the influence between them.

Teaching and Training

11. Educational strategies for continuing professional development to promote the implementation of research findings.
12. Effectiveness and cost-effectiveness of teaching critical appraisal skills to practitioner, road user (groups), politicians, and commerce and industry to promote the uptake of research findings.
13. The role of undergraduate training in promoting the uptake of research findings.

The list has been set in a wider context of traffic and transport rather than cycling alone. A broader vision is important from the Department's point of view. It could help considerations on training and information needs following the publication of the White Paper on Integrated Transport, as well as on research evaluation. Professional and academic institutions in the UK, other government departments, research organisations and many others have both specific and general interests in these areas. For example, the UK government's Department for International Development has commissioned research into improving access to the knowledge that exists for the improvement of physical and social infrastructure (Max Lock 1998). And the UK's Engineering and Physical Science Research Council (EPSRC) found that only one of 35 projects it audited in one programme reported a major application of findings by the time of the review (EPSRC 1998).

Next Steps: The list of possible priority areas for research could be a useful framework for considering cycling issues - providing that a focus on cycling is maintained by those carrying out any work within it. The Joint Working Group has endorsed the need for research to be conducted in these priority areas for cycling (and walking). The plan is to propose letting a commission to review the feasibility of transferring the methodology and priority areas between the health and traffic/transport domains. The contractor will have to make recommendations and, where appropriate, to support each priority area with a justification for work, specification and list of required outputs, where agreed, to fit into the overall research programme. The purpose of this paper is to invite comment on the overall proposal and on any aspect that readers believe is worthy of further examination of how to get research results into practice for the benefit of cycling.

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THE INFLUENCE OF STRONG PEDESTRIAN AND BICYCLE FLOW ON THE CAPACITY OF ROUNDABOUTS

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THE INFLUENCE OF STRONG PEDESTRIAN AND BICYCLE FLOW ON THE CAPACITY OF ROUNDABOUTS

Single-lane roundabouts may face the problems of getting crowded and empty in their circulatory roadway due to a strong stream of pedestrians and/or cyclists:

Vehicles at the roundabout entries or exits have to provide the right of way over pedestrians and/or cyclists. Therefore, it comes to disturbances and traffic jams. When the length of vehicle platoon at the exit is so long that it reaches the precedent entry, the roundabouts suffer from getting fully overcrowded.

The paper presents the methodology of calculating the reduction of the roundabout capacity due to the pedestrian or cyclist stream. The method of calculating the reduction of the roundabout capacity with the disturbed streams may be used for roundabouts in urban environments, where the strength of the cyclist or pedestrian streams is not negligible.

DER EINFLUSS EINES STARKEN FUßGÄNGER- UND RADFAHRERSTROMS AUF DIE KAPAZITÄT VON KREISVERKEHREN

Ein starker Strom von Fußgängern und/oder Radfahrern kann bewirken, daß sich der Verkehr in einspurigen Kreisverkehren staut oder die Verkehrsfläche leer bleibt.

Fahrzeuge an den Einfahrten und Ausfahrten von Kreisverkehren müssen den Fußgängern und/oder Radfahrern den Vorrang einräumen. Deshalb kommt es zu Störungen und Verkehrsstauungen. Wenn die Länge der Warteschlange an der Ausfahrt so lang ist, daß sich die Fahrzeuge bis zur unmittelbar davor liegenden Einfahrt zurückstauen, kommt es zur vollständigen Verstopfung von Kreisverkehren.

Das Referat präsentiert eine Methode zur Berechnung der Kapazitätsverringierung von Kreisverkehren aufgrund des Fußgänger- oder Radfahrerstroms. Die Methode zur Berechnung der Kapazitätsverringierung von Kreisverkehren unter Heranziehung der gestörten Verkehrsströme kann für Kreisverkehre im städtischen Umfeld angewandt werden, wo der Umfang des Radfahrer- oder Fußgängerverkehrs nicht vernachlässigbar gering ist.

ZMANJŠANJE KAPACITETE ENOPASOVNEGA KROŽNEGA KRIŽIŠČA ZARADI MOČNEGA TOKA PEŠCEV IN/ALI KOLESARJEV

V krožnih križiščih z enim voznim pasom v krožnem toku lahko, zaradi močnega toka pešcev in/ali kolesarjev, nastopajo problemi polnjenja in praznjenja krožnega križišča.

Vozila na vhodih/izhodih v krožno križišče morajo pešcem/kolesarjem odstopiti prednost. Vsled tega prihaja do oviranosti tokov in zastojev. Če do zastojev prihaja na vhodu, vozila ne morejo uvažati v krožno križišče. Če pa do zastojev prihaja na izhodu, vozila ne morejo zapuščati krožnega križišča. V primeru, ko je dolžina vozil v koloni na izhodu iz krožnega križišča dolga toliko, da doseže predhodni vhod, nastopijo problemi polnjenja krožnega križišča.

V prispevku je prikazana metodologija izračuna zmanjšanja kapacitete krožnega križišča zaradi tokov kolesarjev in pešcev. Metodologijo izračuna zmanjšanja kapacitete krožnega križišča s pomočjo oviranih tokov je smiselno uporabljati pri krožnih križiščih v urbanih sredinah, kjer so jakosti prometnih tokov kolesarjev in pešcev nezanemarljive.

ENGLISH

DEUTSCH

SLOVENSKO

THE INFLUENCE OF STRONG PEDESTRIAN AND BICYCLE FLOW ON THE CAPACITY OF ROUNDABOUTS

INTRODUCTION

Single-lane roundabouts may face the problems of getting crowded and empty in their circulatory roadway due to a strong stream of pedestrians and/or cyclists. If the stream of vehicles is directed to the entry, it will be uncertain to reach the minimum capacity. If the stream of vehicles is directed to the exit, the maximum capacity is exceeded (Fig.1)

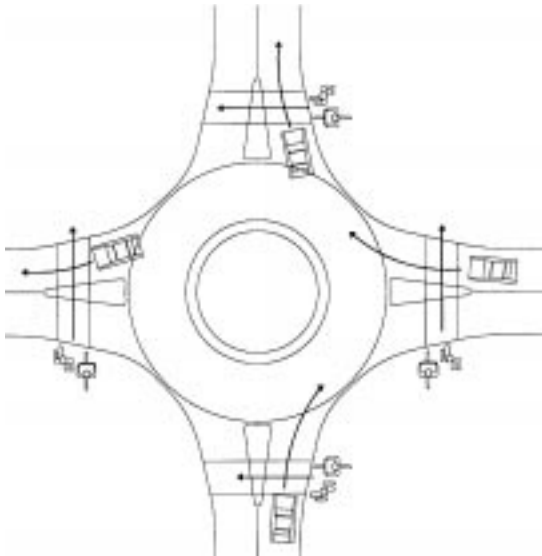


Fig.1. Disturbed streams in roundabouts

How far does the strength of the pedestrian/cyclist stream influence the roundabout capacity or how far do the crossing streams of pedestrians and cyclists disturb the stream of vehicles?

Although there are mainly two problems (the problem of filling and the problem of emptying roundabouts), in reality they occur at the same time. The paper treats them separately in order to get a better explanation.

EMPTYING THE ROUNDABOUT

The stream of motor vehicles is directed to the roundabout exit and it is crossed by a strong pedestrian/cyclists stream (Fig. 2). When a strong pedestrian/cyclist stream crosses one of the roundabout legs, disturbances in vehicular flow at the first adjacent entry occur (opposite the traffic movement in the roundabout). It leads to vehicle delays. If the strength of the pedestrian/cyclists stream increases, the flow disturbances are carried over to the next entry and entering or leaving the carriageway is possible only on remaining two quadrants. Accumulation of vehicles on one of the two remaining quadrants results in delays on all entries. Thus, the whole roundabout is totally blockaded. The blockade of a roundabout, which may occur or not, depends on the strength of the traffic flow and on the way (distribution) how pedestrians or cyclists enter the roundabout.

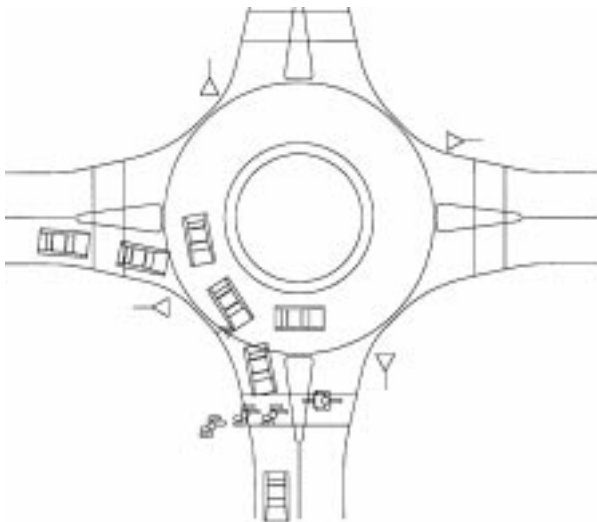


Fig. 2. Disturbances in vehicular flow at the first adjacent entry occur (opposite the traffic movement in the roundabout).

FILLING UP THE ROUNDABOUT

The similar situation occurs when vehicles enter a roundabout. However in this case vehicles are hindered twice (Fig. 3). Vehicles enter the roundabout leg, which is intersected by a flow of pedestrians/cyclists. Gaps between two successive pedestrians/cyclists are so long that vehicles at the entry use them and drive into the roundabout undisturbed. If there is no circulation carriageway in the roundabout or the gaps between vehicles in the circulation carriageway are big enough, vehicles drive into the carriageway undisturbed.

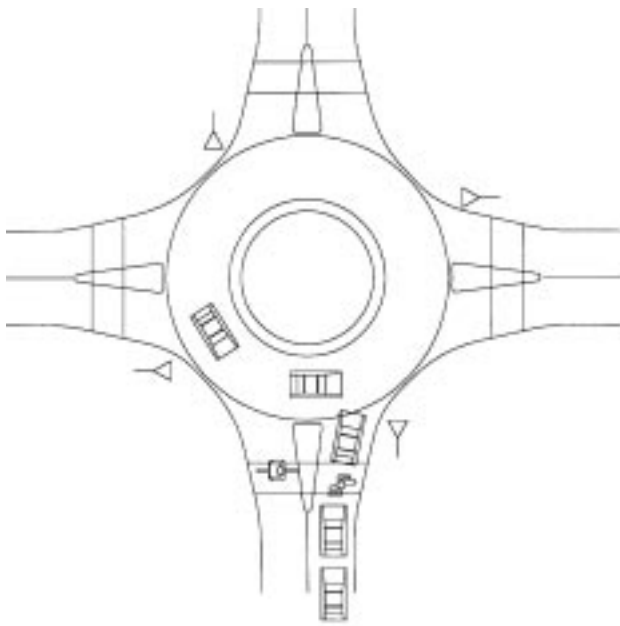


Fig. 3. Filling up the roundabout

By increasing the flow of pedestrians/cyclists, gaps between traffic flow units decrease. There are situations when particular gaps are shorter than it is acceptable. In this case the vehicle is queued before pedestrian crossing. If the flow of pedestrians/cyclists is strong, a platoon of vehicles appear at the entry of the roundabout. A platoon also takes place at the entry if there is a strong circulation carriageway. In this case one vehicle delays between inscribed kerb of the circulation carriageway and the kerb of the pedestrian crossing, while other vehicles queue up at the entry of the intersection.

A delay at the roundabout entry occurs also in the case of the vehicles delay on a circulation segment which results from disturbed flows at the next roundabout exit.

EMPTYING AND FILLING THE ROUNDABOUT AT THE SAME TIME

In practice there is usually the combination of both examples at the same time, that means the roundabout gets filled or emptied at the same time. It is also usual that the intensive flow of pedestrians/cyclists intersects only one of the roundabout legs. However, there are occasions when a stream of pedestrians/cyclists intersects all the legs, the consequence of which is that the blockade occurs earlier.

The paper presents the analysis of the situation where a strong pedestrian/cyclist stream intersects only one of the roundabout legs.

Vehicles are leaving the roundabout. They must give priority to the stream of pedestrians/cyclists. If the gaps between the units of pedestrians/cyclists are big enough, drivers at the exit use them for the exit operation. If the crossing stream of pedestrians/cyclists is stronger, there are some delays in the holding line. If the following vehicle is directed towards one of the next exits, there will be no delays in the circulating carriageway as the vehicle continues to move. If the following vehicle is directed towards the same exit (the exit where a vehicle already waits) there is an accumulation of vehicles in the circulating carriageway. If vehicles are entering more intensively, a platoon occurs. If the platoon of waiting vehicles stretches to the preceding entry, there are problems of filling the roundabout with vehicles at the preceding entry.

In a single-circulating roundabout with a storage place for one waiting vehicle three situations occur:

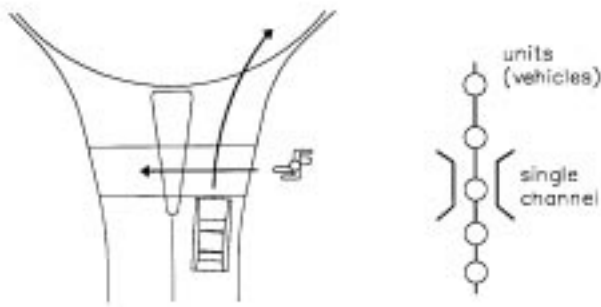
- gaps between particular units of crossing stream satisfy the moving of the vehicles and there are no vehicles in the storage place
- gaps between particular units of crossing stream still satisfy the moving of the vehicles although there are some delays with one vehicle.
- gaps between particular units of crossing stream are too small, the storage place is occupied all the time and every entering vehicle queues in the circulating carriageway.

Theoretically seen, a rough estimation of the effects of the pedestrian and cyclist crossing traffic may be defined from the basic elements of the pedestrian movement and under condition that they enter the roundabout separately.

CALCULATION OF THE REDUCED ROUNDABOUT CAPACITY DUE TO DISTURBED STREAMS

Using the theory of mass service, as a single channel open system can solve the problem of disturbed streams in roundabouts. The entering/leaving units (vehicles) into the system (roundabouts) are coincidental. The system is single-channeled, as in a certain moment only one unit (vehicle) may be serviced (crossing). The system is open as the units (vehicles) enter the system (the roundabout) from the surroundings (Fig. 4).

Fig. 4. Roundabout entry = single-channeled open system of mass service



The entering/leaving of the vehicles follows the Poisson's law of distribution, as the following is accomplished:

- the probability of entering/leaving of a vehicle $p_n(t)$ depends on the length of gaps and the number of entering/leaving vehicles, and not from the beginning of its measuring
- the probability of entering/leaving of a vehicle $p_n(t)$ does not depend on the number of entering vehicles before gap

- measuring - flow without consequences
- in a sufficiently long gap two or more vehicles cannot enter

Stream disturbing may be defined with the factor of operation:

where

is the intensity of entering vehicles at the entry/exit

is the operating intensity at the roundabout entry/exit

λ The value of the operating factor can be

μ

the stream of the vehicles is undisturbed

the stream of the vehicles is disturbed

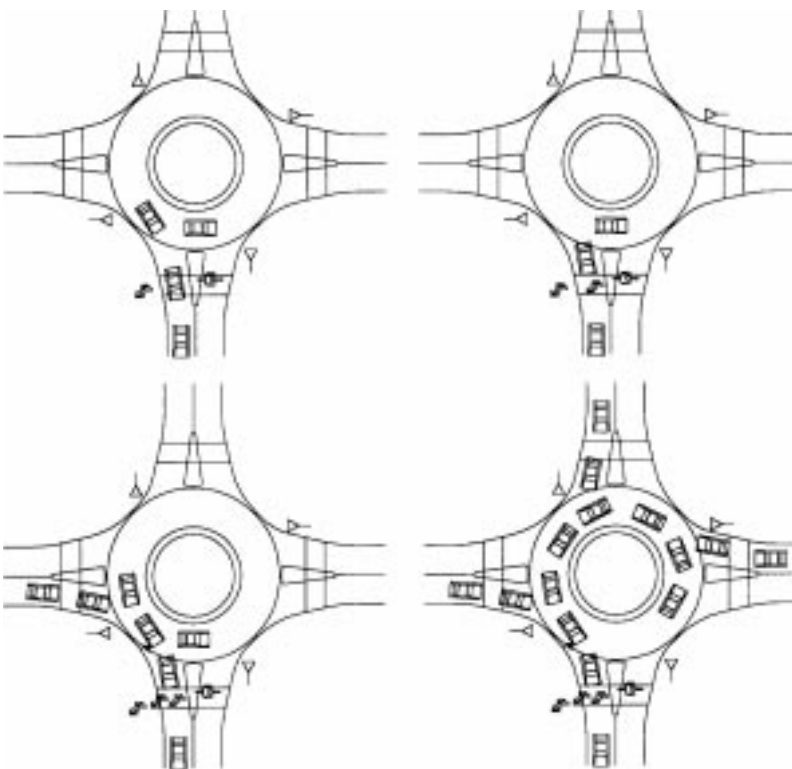
$$\rho = \frac{\lambda}{\mu}$$

$\rho < 1$ We define the criterion for the blockade of the roundabout exit with single-lane circulating carriageway (Fig. 5):
 $\rho \geq 1$

The roundabout exit is blockaded in the case when a vehicle reaches the exit, but the vehicle reaching it before has not left the holding line yet.

Fig.5. The blockade of roundabout in four steps

In this case we deal with a single-channeled system of mass operation with a limited holding line.



If the length for holding or the possible number of vehicles in the holding line is marked with m and considering that in the system there may be from 0 to $m+1$ vehicle, then a roundabout with a single-lane circulating carriageway applies as:

The probability of a particular system state is calculated with:

while p_0 depends on the value $0 \leq m \leq 2$ of the operation factor.

$$p_n = p^n * p_0 \quad n = 1, 2$$

$$\rho < 1 \quad p_0 = \frac{\rho - 1}{\rho^{m+2} - 1}$$

$$\rho \geq 1 \quad p_0 = \frac{1 - \rho}{1 - \rho^{m+2}}$$

It must be stressed here that the counting of traffic should be done in the rush hour in a short gap. At the same time we must calculate the time a vehicle needs to enter the circulating carriageway. This result must be compared with other measures of an acceptable gap for to turn right in the crossing.

CONCLUSION

In calculating the real capacity of a roundabout with a single-lane entry, a single-lane circulating carriageway and with a strong cross stream of pedestrians and cyclists it is necessary to take into consideration the decrease of the roundabout capacity due to disturbed flows at the roundabout entries and exits.

Disturbed flows appear when the pedestrian/cyclist stream is strong and the gaps are too small to enable the vehicles to pass. Vehicles at the roundabout entries and exits have to give way to pedestrians/cyclists. Therefore there are disturbances in flows and delays.

Using the theory of mass service, as a single channel open system can solve the problem of disturbed streams in roundabouts. The method of calculating the reduction of the roundabout capacity with the disturbed streams may be used for roundabouts in urban environments, where the strength of the cyclist or pedestrian streams is not negligible.

The stage of disturbance depends on mutual relation and strength of vehicle flows and pedestrians and/or cyclists.

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EXPERIENCE WITH ROUNDABOUTS IN SWITZERLAND

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ENGLISH

EXPERIENCE WITH ROUNDABOUTS IN SWITZERLAND

Cyclists accept single-lane roundabouts as a useful and safe form of traffic intersection, provided that dimensions, geometry and organisation are appropriate for their specific patterns of movement and allow for the typical behaviour of two-wheelers.

In roundabouts, most cyclists ride in the middle of the lane, demanding to be respected as equal road users by car drivers. To protect this behaviour, which represents a safe way of participating in traffic, Swiss legislators have introduced new traffic regulations which entitle cyclists in this exceptional situation to „obstruct“ motorised traffic: "At single-lane roundabouts, cyclists are therefore released from the obligation to use the right side of the road."

This paper draws on experience gathered in the canton of Bern and refers to the Swiss standard „Intersection Elements of Light Two-Wheeled Traffic“ which will be published this year. This standard does not regulate roundabouts as such but indicates sequences of movement and elements which should, for the benefit of cycle traffic, be taken into account when planning roundabouts.

DEUTSCH

KREISVERKEHR - ERFAHRUNGEN AUS DER SCHWEIZ

Velofahrende akzeptieren einstreifige Kreisfahrbahnen als zweckmässige und sichere Knotenform, sofern Abmessung, Geometrie und Organisation ihren Fahrlinien entsprechen und zweiradspezifisches Verhalten ausgelebt werden kann.

Mehrheitlich fahren Velofahrende in der Kreisfahrbahnmittte und fordern so den Respekt der Motorfahrzeugführer, sie als gleichberechtigte Partner am Verkehrsgeschehen teilhaben zu lassen. Um dieses verkehrssichere Verhalten zu schützen, hat der Schweizer Gesetzgeber eine Verkehrsregel-Novelle eingeführt, welche Velofahrenden ausnahmsweise das Recht zugesteht, Motorfahrzeuge zu "behindern" v. "Auf Kreisverkehrsplätzen ohne Fahrstreifen-Unterteilung können Radfahrer vom Gebot des Rechtsfahrens abweichen."

Das Referat stützt sich auf Erfahrungen im Kanton Bern und auf die im laufenden Jahr erscheinende Schweizer-Norm "Knotenelemente des leichten Zweiradverkehrs". Genormt wird darin nicht Kreisverkehr an sich, sondern Bewegungsabläufe und Elemente, die im Interesse der Sicherheit für Velofahrende bei der Projektierung von Kreisverkehrsanlagen zu beachten sind.

SLOVENSKO

KROŽNI PROMET - ŠVICARSKE IZKUŠNJE

Kolesarji sprejemajo eno-pasna krožišča kot smotne in varne oblike vozlišč, dokler dimenzije, geometrija in organiziranost odговarjajo njihovim voznim linijam in jim je omogočeno vedenje, specifično za dvokolesa.

Kolesarji večkrat vozijo po sredini krožišča in tako zahtevajo, da jih vozniki motornih vozil upoštevajo kot enakopravne udeležence v prometu. Za varovanje tega prometno-varnega obnašanja, je švicarski zakonodajalec uvedel novelo k prometnim predpisom, ki kolesarjem izjemoma daje pravico "oviranja" voznikov motornih vozil: "Na krožiščih brez označenih voznih pasov lahko kolesarji odstopijo od pravila desnega."

Referat se opira na izkušnje iz kantona Bern in na švicarski predpis "Elementi vozlišča lahkega dvokolesnega prometa", ki je bil uveljavljen v tem letu. V predpisu ni normiran sam krožni promet, temveč potek premikanja in elementi, ki jih je, v zvezi z varnostjo kolesarjev, potrebno upoštevati pri projektiranju objektov za krožni promet.

FRIDAY

Hinterräder von Bussen und Lastwagen überfahrbaren Ring umgeben sein.

3.4. GEOMETRIE/ FAHRDYNAMIK:

Beim Festlegen der Ränder ist darauf zu achten, dass alle am Verkehr partizipierenden Fahrzuege für jeder zulässige Knotendurchfahrt nicht mehr als drei Richtungswechsel ausführen müssen.

3.5. KNOTENZUFUHRT

Fall a. Velos konventionell auf der Strasse geführt- Einfahrt in Kreisfahrbahn einstreifig. Bei hoher Knotenbelastung anstelle zweistreifiger Einfahrt, Bypass vorsehen.

Fall b. Velos auf Velostreifen geführt:

Einfahrt in Kreisfahrbahn einstreifig, Velostreifen 1 A - 25 m vor der Kreisfahrbahn auslaufen lassen. Spezialfall "Bypass bei hoher Belastung": Radstreifen für geradeaus fahrende Velos durchgehend bis an Kreisfahrbahnrand heranziehen.

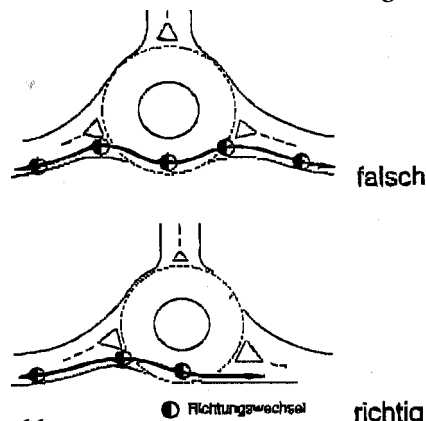


Abb. 2

Fall c. Velos auf gleichlaufendem Veloweg geführt: In Anwendung des Prinzip Fahrstreifenaddition Veloweg 60 m - ausnahmsweise 30 m - vor der Kreisfahrbahn in Radstreifen übergehen lassen, dann analog Fall b, "Velostreifen".

Fall d. Velos auf linksseitigem Zweirichtungveloweg geführt: Veloweg 60 - 30 m vor der Kreisfahrbahn mit gleichlaufendem Knotenast verknüpfen und den Richtung Kreisverkehr fahrende Veloverkehr mittels inselgeschützter Querungshilfe in den Verkehr integrieren. Zudem Radweg mit Knotenast von links verknüpfen.

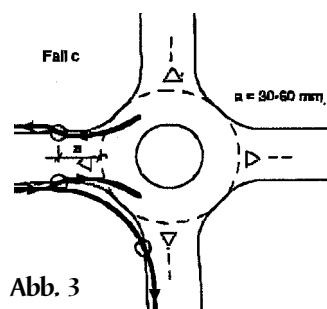


Abb. 3

Fall e. Velos auf rechtsseitigem Zweirichtungveloweg geführt: Veloweg 60 - 30 m vor der Kreisfahrbahn in Anwendung des Prinzips Fahrstreifenaddition in die anliegende Strasse einführen. Zudem mit Knotenast von rechts verknüpfen.

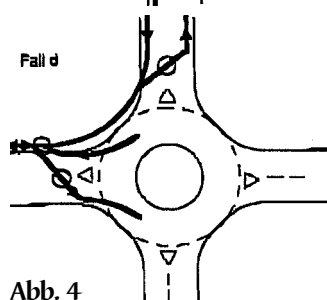


Abb. 4

Fall f. Velos auf strassenunabhängigem Radweg geführt: Radweg wie eine Strasse mit grosszügigem Einlenkerradius (6 m oder grösser) sowie Mittelinsel als Verkehrsteiler an Kreisfahrbahn anschliessen.

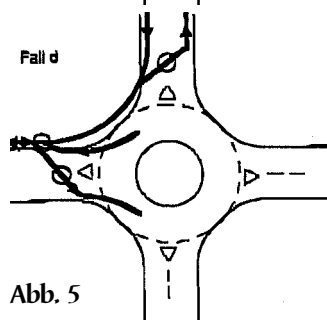


Abb. 5

3.6. KNOTENWEGFAHRT:

Fall a. Velos konventionell auf Strasse geführt: einstreifige Knotenwegfahrt, mehrstreifige Wegfahrt vermeiden.

Fall b. Velos auf Velostreifen geführt: Beginn der Velostreifen unmittelbar nach dem Verlassen der Kreisfahrbahn. Spezialfall ("Bypass von rechts": Bypass vortrittsbelastet an wegführenden Knotenast anschliessen.

Fälle c + d. Velos auf anliegendem Veloweg (gleichlaufend oder Gegenverkehr von Velos) geführt: Velos 10 bis 60 m nach dem Verlassen der Kreisfahrbahn in den Radweg einführen. Die Öffnung zwischen Radweg und Strasse soll mit

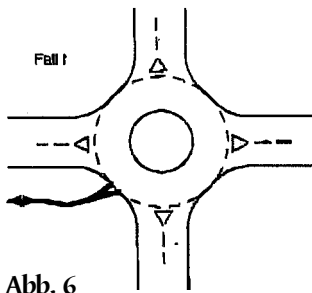


Abb. 6

10 m lang sei.

Fall e., Velos auf gegenüberliegendem Zweirichtungsveloweg geführt: Velos mittels Querungshilfe (=1.5 bis 2.5 m inselgeschützter Mittebereich) von 30 m Länge, beginnend 10 m nach dem Verlassen der Kreisfahrbahn, auf den gegenüber liegenden Veloweg überleiten.

Fall f, Velos auf strassenunabhängigem Veloweg geführt: Einlenkerradius gleich oder grösser 6 m analog Zufahrt.

4, DIE VERKEHRSSICHERHEIT

Ab durch die Mitte ist für Velofahrende die verkehrssicherste und zeitsparendste Variante einen Kreisverkehrsknoten zu befahren. Markierte velostreifen als Teil der Kreisfahrbahn laufen diesem verhalten zuwider und gelten als nicht verkehrssicher. Aus demselben Grunde wurde bewusst darauf verzichtet eine Praxis zu entwickeln, Velowege um die Kreisfahrbahn herum und mittels Velofurten über die Knotenäste hinweg zu führen. mit Durchmessern unter 24 m. Sie werden möglichst vermieden

5. VERKEHRSELASTUNG

Auf Kreisverkehrsanlagen mit mehr als 30'000 Fahrzeugen pro Tag kann die Einhaltung der vorgenannten Bedingungen zu Nachteilen (Rückstau) für andere Verkehrsteilnehmer führen. Wird daraus die Forderung abgeleitet, Knotenäste mehrstreifig in den Kreisverkehr einzuführen, sollte auf lichtsignalgeregelte Knotenformen auszuweichen.

6. SCHLUSSBETRACHTUNG

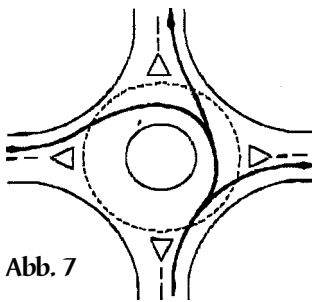


Abb. 7

Im Kanton Bern (6000 Km², 1 Mio Einwohner, 500'000 velo) sind heute über 50 Kreisverkehrsanlagen im Betrieb. Die Erfahrungen aus der Umstellung auf Kreisverkehr sind durchwegs positiv: Dank Anwendung der oben genannten Bedingungen wurde im Resultat sowohl eine Abnahme der Anzahl Unfälle wie auch eine Abnahme der Unfallfolgen erzielt. Zwar partizipieren Velos an diesem Resultat weniger stark als Motorfahrzeuge, doch ist festzustellen, dass der veloverkehr nach der Umstellung auf Kreisverkehr in den meisten Fällen zugenommen hat

Wie bei andern Knotenformen erwähnen Velofahrer auch auf Kreisverkehrsplätzen Busse und Lastwagen überdurchschnittlich als Konfliktpartner. In der Nähe von Schulhäusern wird deshalb im Bereich der Knotenzufahrt der Übergang zwischen der Fahrbahn und

der Fussverkehrsfläche auf eine Länge von ca. 10 m "weich" ausgestaltet, so dass Velofahrende (Kinder) die Strasse verlassen (Fluchtweg) und den Knoten zu Fuss "überwinden" können.

Zu Problemen Anlass geben Kreisverkehrsanlagen mit mehrstreifigen Zufahrten oder 8- März 1999 /

PORTSMOUTH BIKEABOUT: AN AUTOMATED SMART-CARD OPERATED BIKE POOL SCHEME

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ENGLISH

PORTSMOUTH BIKEABOUT: AN AUTOMATED SMART-CARD OPERATED BIKE POOL SCHEME

Pool bicycle schemes could extend cycle use, but have faced serious operational difficulties. Bicycles are stolen or vandalised and faults not noted. The Portsmouth 'Bikeabout' scheme has addressed these issues.

Three secure cycle depots are accessed by the use of a smartcard. When inserted into a depot console, a computer releases a bicycle from an electronically controlled rack. Users can report any faulty bike and obtain another, and return bikes the same way. Bikeabout is reliable, popular and no bicycles have been stolen or vandalised.

The Bikeabout system has been sold to the city of Rotterdam and another UK company is developing a similar system. A solution to the main problems of pool bicycle schemes has been achieved.

DEUTSCH

BIKEABOUT IN PORTSMOUTH: EIN AUTOMATISIERTES FAHRRADVERLEIHSYSTEM MIT SMART-CARD

Fahrradverleihsysteme könnten den Gebrauch von Fahrrädern verstärken, doch war der Betrieb solcher Systeme bisher durch Schwierigkeiten charakterisiert. Fahrräder werden gestohlen oder beschädigt, und Mängel werden nicht wahrgenommen. Das „Bikeabout“-System von Portsmouth hat sich dieser Problematik angenommen.

Mit Hilfe einer Smart-Card erhält man Zugang zu drei sicheren Fahrraddepots. Wenn die Karte in die Computerkonsole eines solchen Depots eingeschoben wird, gibt der Computer ein Fahrrad aus einem elektronisch gesteuerten Fahrradständer frei. Der Benutzer kann, falls er ein schadhaftes Fahrrad erhalten hat, reklamieren und ein anderes erhalten. Auf dieselbe Weise werden die Fahrräder auch zurückgegeben. „Bikeabout“ ist zuverlässig und beliebt, und es wurden bisher keine Fahrräder gestohlen oder beschädigt.

Das System „Bikeabout“ wurde an die Stadt Rotterdam verkauft, und ein anderes Unternehmen in Großbritannien entwickelt derzeit ein ähnliches System. Damit ist eine Lösung für die größten Probleme der Fahrradverleihsysteme gefunden.

SLOVENSKO

PORTSMOUTH BIKEABOUT – ŠHEMA AVTOMATIZIRANEGA KOLESARSKEGA SISTEMA NA OSNOVI INTELIGENTNE KARTICE (SMART-CARD)

S shemo kolesarskega sistema bi lahko razširili uporabo koles, če se ne bi srečali z resnimi operativnimi težavami. Kolesa so ukradena in uničena in o posledicah se ne razmišlja. S tem vprašanjem se ukvarja sistem Bikeabout.

Dostop do treh zavarovanih kolesarskih postaj je možen z uporabo inteligentne kartice. Ko se ta vstavi v postajno konzolo, računalnik iz elektronsko zaklenjega stojala "izpusti" kolo. Uporabniki lahko prijavijo vsako poškodovano kolo in dobijo drugega ter na isti način vrnejo kolo. Sistem Bikeabout je zanesljiv, priljubljen in od začetka njegove uporabe ni bilo ukradeni ali poškodovani še nobeno kolo.

Sistem Bikeabout je kupilo tudi mesto Rotterdam in v Veliki Britaniji še ena družba razvija podoben sistem. Dosegli smo rešitev glevnih problemov shem kolesarskega sistema.

FRIDAY

PORTSMOUTH BIKEABOUT: AN AUTOMATED SMART-CARD OPERATED BIKE POOL SCHEME

THE CONTEXT OF THE 'BIKEABOUT' SCHEME

The bicycle is probably the ultimate clean transport technology. The main challenge is not so much in the further development of bicycle design than in devising ways its use can be expanded. The dominant policy approach to promoting bicycle use has involved municipalities providing physical measures, such as cycleways and cycle lanes, which provide additional protection to cyclists. Other policy mechanisms, such as alternative means of obtaining access to bicycles, or the subsidisation of bicycle use are rare, yet such measures are commonplace for promoting the use of public transport or car sharing. One alternative way of providing access to a bicycle is via pool bicycles and bicycle loan schemes, but these have faced serious operational difficulties, including bicycles being stolen or vandalised and problems with the reliability of the pool bicycles.

The Portsmouth 'Bikeabout' scheme sought to address these issues. It was part of Portsmouth University's 'Mobility Policy' which sought to cut car travel by staff and students between two city-centre University sites 3 km apart. Because of its innovative nature, the project secured funding from the EC's ENTRANCE (Energy Savings in Transport through Innovation in the Cities of Europe) programme. The basic concept was to use Smartcards to ensure that Bikeabout would provide the security and reliability so lacking in previous pool bike schemes. In total, Bikeabout has costs 290 000 Euros to implement.

The University of Portsmouth is located on the south of Portsea Island and is split between two main sites within the city. The Guildhall Campus is the main site containing the Library, Students Union, sports facilities and administration buildings. Milton Campus is approximately 3 km away and contains the business school. The Langstone Campus, a little further on, contains a large proportion of the University's Halls of Residence.

THE BIKEABOUT SYSTEM

Bikeabout's smartcard-based system is entirely automated. For a small fee, users obtain their own card providing access to the three bicycle depots. The depots provides covered and secure compounds, complete with CCT surveillance to help prevent vandalism. All depots have a single entrance/exit past a central console. The console is designed and constructed to house a computer, bicycle rack controls, card reader, and the VDU screen.

The smartcard is inserted into the console and the computer instructs an electronically controlled rack to release a bicycle. Details are recorded and the information written to the smartcard. Users can report bike faults to the console if necessary and obtain another. An on-line link to the depots provides overnight data transfer, to allow for transferring bikes around and to draw up repair/maintenance schedules.

At the end of the journey the smartcard is used to open a cycle rack in one of the depots and the safe return of the bicycle is recorded. Particular preferences can be recorded so that users are able to use the type of bicycle they prefer. The bicycles are of a utility design with dynamo lighting, easily adjusted seat height and a large front carrier.

The bicycle has to be returned within a specified time of three hours. Penalty points can automatically be added to a card if the bicycle is returned late or is found to have been damaged. Once the penalty points amount to a pre-determined level, an automatic 'hold' can be put on the cards of people who abuse the system and the system administrator notified. The system can issue warnings to the administrator when a cycle depot is becoming full or empty, to enable bicycles to be redistributed.

USERS EXPECTATIONS OF BIKEABOUT

As part of the planning process, staff and students were surveyed about their views of a bike pool scheme. Their expectations were that it would start off with grand intentions but, as with other cycle schemes (such as the Cambridge bike pool scheme which was receiving a bad press at the time), the expectation was that Bikeabout would in time become dilapidated and vandalised before eventually folding. This perception highlighted the need for the Bikeabout concept to establish and maintain credibility. This meant that quality and well-maintained bicycles would need to be provided within a secure, reliable and efficient system. This fed into the design specifications of Bikeabout, as detailed above.

In addition, the need for better safe cycle routes was identified. Portsmouth City Council has a policy of developing a network of cycle routes throughout the city, and they provided a safe cycle route between the two initial Bikeabout depots. This has been achieved through several measures, including cycle lanes and two signal controlled crossings where the route crosses heavily trafficked roads. The University Transport scheme funded a cycle-route for the other half of the route which joined the two sites and ensured that cycling is now a safer and more viable alternative.

BIKEABOUT IN PRACTICE

Phase One of Bikeabout was launched in October 1995 with two depots opening at the opposite ends of a designated cycleway, with forty bikes in distinctive university livery ready for use. This was replaced with a fully automated scheme with one hundred bikes which opened in July 1996. By mid 1997, 500 users had registered for a smartcard.

To monitor and evaluate the success of the Bikeabout scheme, detailed research and a user survey was commissioned by Hampshire County Council (Black, 1996, 1997b; TRL, 1997). The survey discovered that 33% of Bikeabout users were people who did not have a bicycle and most of them had not used a bicycle for several years. The scheme was thus re-introducing people back to bicycles. Unlike car-sharing, which is a way to wean people off private car use and to reduce car use overall, one function of bicycle sharing is to have the opposite effect; it is a way to get people into private cycle ownership.

The survey revealed details about the modal transfer to Bikeabout bicycles. Almost one fifth of the journeys were previously made using a motor car. For these people the attraction of the scheme was a willingness to travel in a more 'environmentally friendly' manner, or to do more exercise. The largest (41.5%) modal substitution to Bikeabout bicycles was from walking. This is probably because the scheme offered significant time savings. The scheme also generated a number of new journeys; by improving personal mobility a number of new trips have now become possible within a reasonable period of time. Many of these journeys were made by students visiting their home between lectures. 5% transferred from personally owned cycles as they preferred to use the Bikeabout cycles rather than worry about the safety of their own.

15.5% of journeys were previously made by public transport. The bicycles offer a door-to-door alternative that the bus cannot provide. The relative time flexibility of the bicycle compared to mass-transit was also evident in the number of transfers (13%) from the University's mini-bus service.

An investigation of non-users of Bikeabout indicated that the most common reason for not using the scheme was because the respondent already owned a bicycle. A substantial number of non-using respondents said that they would be more likely to consider joining when the weather had improved. This seasonal aspect of cycling needs to be acknowledged!

A number of respondents indicated that they would rather use their car or get a lift from friends than to cycle. About 11% of people surveyed said that they would not use the scheme because they did not have enough information about it, despite an explanation from the interviewer. A number of respondents said that most of the journeys that they make during the day are more easily made by walking, indeed, for short journeys using a Bikeabout bicycle may take more time. Others said that they did not like cycling or did not feel safe enough cycling. The continuation of Portsmouth City Council's programme to expand the cycle routes and cycle facilities in Portsmouth will therefore further enhance the success of the scheme.

The research also indicated a high perception of bicycle crime in the Portsmouth area. It appears that the depots used in the Bikeabout scheme have helped to address this concern. The opportunity to absolve responsibility for cycle theft once the bicycle in the depot was highlighted as a significant factor influencing the decision to join the scheme.

Overall, although these results are positive, it is unlikely that the Bikeabout scheme can attract significant numbers of car users without the political will to instigate a number of complementary measures to discourage car use. Now that an alternative means of transport is available for inter-site journeys it would be prudent for the University to introduce a number of disincentives for using a car for inter-site travel.

LESSONS LEARNT FROM THE BIKEABOUT PROJECT

The two most important lessons to be learnt from the Bikeabout project are probably, firstly; the need to incorporate the scheme into a more integrated strategy in order to persuade car-users to use it. This still holds true, even though it was recognised before the scheme was implemented.

"It would seem unlikely that the development of a cycle pool could alone bring about a decrease in the use of private transport. As part of a wider, integrated programme, however, it may well have a significant role to play." (Perry and Bateman, 1994).

Secondly, is the importance of an effective marketing strategy. Research discovered that the staff and students at the university did not have enough information about the Bikeabout scheme. Over 32% of people still did not know the scheme existed.

It is also important to maintain the high standards of maintenance and cleanliness of the depots and bicycles. It was evident in the surveys that just one experience of a bicycle in unsatisfactory condition, or the system not operating properly can significantly undermine confidence in the scheme and may be sufficient put off a new user.

Bikeabout has overcome the main problems of shared bicycle schemes by providing the core requirement of secure access to working bicycles on demand. The technical side is a virtually unqualified success. However, it is not sufficient to merely provide a cycle-loan scheme and simply expect people to use it. Just because the technology has helped to address the security and maintenance issues, it does not follow that people will then start to use the scheme. There are a number of other factors that all contribute towards the under-utilisation of the bicycle as a mode of transport. One of the most important observations to be made is, therefore, that such schemes will operate most effectively if they can be incorporated into an integrated package which seeks to manage the use of cars at the same time as providing new transport opportunities.

It is in applying this as a "tool" to a transport problem is where uncertainty remains. In terms of Bikeabout as it is currently organised, such schemes cannot be expected to succeed as isolated measures. They have to be integrated with other transport management techniques and schemes. Significantly, smartcard systems have the potential to offer a totally different way of obtaining access to mobility. This is something that could totally change our current private car-focused paradigm and facilitate a technology regime change in the car.

BIKEABOUT IN ROTTERDAM

Bikeabout is now a commercial product. The system has already been marketed by its manufacturers, B. Dixon Bate, to the city of Rotterdam, where a 6 month experiment with three staffed depots began on September 1st 1997. These are at the Coolhaven and de Meent Metro stations and at Binnenrotte. The Rotterdam scheme is aimed at commuters (Horsten, 1997). A f50 (25 Euros) deposit is required for a smartcard to be issued. This is refunded when the undamaged bicycle is returned. For the initial 6 month trial, only 25 bicycles were available, which has led to some problems of bicycles being in the wrong place. After the trial period, it was intended to increase the number of bicycles to 75.

The project is led by a civil servant from the municipal construction and housing department, and the daily management is under the care of the 'Green Wheels' car rental company. A security firm is employed to supervise the depots and to maintain the bicycles.

The scheme seems to have proceeded well, although some software problems needed attention and there were some problems of minor faults to bicycles (e.g. flat tyres) not being reported (possibly so as not to endanger the users' f50 deposit!). Although a few people did take bicycles home, they soon returned them after they were contacted. No bicycles have as yet gone missing.

The way in which the Bikeabout concept has been applied in Rotterdam is somewhat perplexing. The Bikeabout package was designed to allow the bike scheme to operate without the need for personnel stationed at the depots. Indeed, the technology employed by the scheme means that supervisors are not required. However, in Rotterdam, it is necessary to show your smartcard to the security guards before they unlock the depot and then use the smartcard to unlock a bicycle. It is difficult to understand why the depots need to be locked when two security guards are monitoring the site, and the bicycles are in secure lock anyway!

It appears that the Bikeabout technology has been adopted in Rotterdam, but the concept of an automated scheme has not been understood.

FUTURE FOR SMARTCARD/BICYCLE SYSTEMS

There are now other entrants into the smartcard/shared bicycle market. A company called Bikebox in Oxfordshire is marketing a 'Citybike Hire System'. This is designed as a general public scheme along the lines of Copenhagen's Citybike. Like Bikeabout, the system is designed to be entirely automated with bicycles specially made for the hire market, kept in automated stands accessed via a 'Street Control Unit.' The Bikebox system has yet to move to a pilot project, but the existence of a second UK entrant into this product area indicates that 'smart' public bicycle technologies have entered a commercialisation phase.

In the future the smartcard technology and operational system developed for Bikeabout could relatively easily be transformed for application on other types of rental, or loan, schemes. Indeed, B. Dixon Bate are currently investigating the application of the concept to an electric car loan scheme.

The operational problems of a public pool bike scheme have now been solved. The main challenge is now how to use such schemes as an effective part of a transport planning strategy.

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SMART CITY BIKE - A SUBSCRIBER SYSTEM FOR INTERNAL TRANSPORT AND COMMUTING.

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Danielsen CE has been the leader of the City Bike Project in Sandnes for three years. Today he is co-operating with DBS Cycleurope developing the Smart City Bike.

SMART CITY BIKE - A SUBSCRIBER SYSTEM FOR INTERNAL TRANSPORTS AND COMMUTING

The Smart City Bike has an electronic lock that all subscribers can unlock with their personal key. We invite private firms and municipalities to buy subscriptions to their employees. In Sandnes the municipality has decided to buy subscriptions to all the employees and politicians.

The electronic lock has many properties:

- In the city bike racks it works like a city bike lock that all subscribers can use.
- When a subscriber is using the City Bike, the lock is functioning as a private lock for a limited period.
- It gives us user profile, which can improve the system.
- The key stops functioning if a subscriber misuse the system.

The Smart City Bike System is available and easy to operate.

SMART CITY BIKE - EIN VEREINSSYSTEM FÜR DEN STÄDTISCHEN NAHVERKEHR UND PENDLER

Die Stadt Sandnes in Norwegen hat beschlossen, das City Bike als einen wichtigen Teil des gesamten Verkehrssystems der Stadt zu etablieren.

Das City Bike ist als Verkehrsmittel für die Anfahrt zu Auto, Bus, Zug und Boot Teil einer Verkehrskette und stellt ein System für den städtischen Nahverkehr dar.

Es gibt verschiedene Arten von City Bike-Systemen

In Zusammenarbeit mit anderen Städten in Europa haben wir beschlossen, die verschiedenen City Bike-Systeme in drei Hauptgruppen zu unterteilen:

Das offene System, das von jedem benutzt werden kann.

Wenn Sie eine Münze haben und ein City Bike verfügbar ist, nehmen Sie es einfach und verwenden es den Regeln entsprechend. Das offene System zeichnet sich durch eine gute Verfügbarkeit aus, wenn es seinem Zweck entsprechend funktioniert. City Bike-Systeme auf der Grundlage dieses offenen Systems haben die Städte Kopenhagen (Dänemark) und Trondheim (Norwegen). Das offene System ist jedoch anfällig. Wenn wir Vandalismus verhindern können, ist es jedoch ein gutes System.

Das Mietsystem, das erfolgreich an besonderen Fremdenverkehrspunkten angewendet wird, entspricht im Grunde einem normalen Autoverleih. Das System läuft sehr unproblematisch. In Städten, wo City Bikes für alle verfügbar sein sollen, limitiert das Mietsystem den Zugang zu den Fahrrädern allerdings zu stark.

Wir in Sandnes sind der Meinung, daß das Vereinssystem zum effizientesten City Bike-System entwickelt werden kann. Mit Hilfe fortschrittlicher Technologien lassen sich Absperrsysteme entwickeln, die alle Anforderungen der Benutzer, Werbekunden, Betreiber und Behörden erfüllen.

Es ist möglich, Verfügbarkeit und Kontrolle zu vereinen. Es ist ein flexibles System, das den Bedingungen in der Stadt problemlos angepaßt werden kann. Die Benutzer müssen Mitglieder des Vereins sein, doch kann der Erwerb der Mitgliedschaft sehr einfach gestaltet werden.

Sandnes hat beschlossen, als Labor für die Entwicklung von City Bikes und City Bike-Systemen zu fungieren

Bei einer Einwohnerzahl von nur 50.000 ist es möglich, Systeme und City Bikes im Maßstab 1:1 zu entwickeln und zu testen. Sandnes arbeitet mit dem Cycleurope angehörenden lokalen Fahrradhersteller tglnd DBS zusammen. Sandnes hat konkrete Spezifikationen festgelegt, um sicherzustellen, daß ein geeignetes City Bike erzeugt wird.

Die Stadt hat verschiedene Systeme und City Bike-Modelle getestet. Sandnes hat jetzt Erfahrung mit verschiedenen

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offenen Systemen und Mietsystemen.

Nach Entwicklung eines Smart Lock, d.h. eines elektronischen Schlosses für City Bikes wird die Stadt 1999 in Zusammenarbeit mit der Nachbarstadt Stavanger ein Vereinssystem ins Leben rufen, in dessen Rahmen ein City Bike mit dem Smart Lock verwendet wird. Wir nennen es das „Smart City Bike“.

SMART CITY BIKE - NAROČNIŠKI SISTEM ZA NOTRANJI PREVOZ IN REDNO VOŽNJO

Mesto Sandnes na Norveškem, se je odločilo vpeljati mestno kolo, kot pomemben del skupnega prevoznega sistema v mestu. Mestno kolo je del prevozne verige, kot zamenjava za avto, avtobus, vlak ali ladjo in je sistem za kratke razdalje znotraj mesta.

Obstajajo različni tipi sistemov Mestnih koles. V sodelovanju z nekaterimi evropskimi mesti, smo se odločili razdeliti sisteme Mestnih koles v tri glavne skupine:

Odprti sistem, ki ga lahko uporablja vsakdo: Če imaš kovanec in je na voljo kolo, ga vzemi in uporablaj v skladu z pravili. Mesti Copenhagen (Danska) in Trondheim (Norveška) imata odprti sistem, ki je zelo dober, vendar ranjiv. Če je moč preprečiti vandalizem, je to zelo dober sistem.

Najemni sistem, ki ga uspešno uporabljajo v turističnih naseljih, deluje kot običajen sistem za najem avtomobilov. Sistem poteka brez zapletov, vendar v središčih mest, kjer naj bi bila mestna kolesa na voljo vsem, najemni sistem preveč omejuje dostopnost.

V Sandnesu verjamemo, da lahko naročniški sistem razvijemo v najbolj učinkovit sistem Mestnih koles. Napredna tehnologija lahko oblikuje sistem za zaklepanje, ki bi zadovoljeval vse zahteve uporabnikov, oglaševalcev, upravljalcev in strokovnjakov.

Dostopnost in nadzor je možno kombinirati. To je prilagodljiv sistem, ki se lahko hitro prilagodi okoliščinam v mestu. Uporabniki morajo biti naročniki, a to je zelo lahko postati.

Mesto Sandnes se je odločilo prevzeti vlogo laboratorija za razvoj mestnih koles in sistemov Mestnih koles.

S samo 50.000 prebivalci je možno razviti sisteme in mestna kolesa ter jih testirati v vseh ozirih. Sandnes sodeluje z krajevno tovarno koles Oglæd DBS, ki je del Cycleurope in nadzira proizvodnjo zahtevanega mestnega kolesa.

Mesto je testiralo različne sisteme in različne modele mestnih koles in ima izkušnje v uporabi različnih odprtih in najemnih sistemov.

Po razvoju "smart", elektronske ključavnice za mestna kolesa bo mesto, v sodelovanju s sosednjim mestom Stavanger, leta 1999 pričelo z naročniškim sistemom. Poimenovali so ga »Smart City Bike« (inteligentno mestno kolo).

SMART CITY BIKE - A SUBSCRIBER SYSTEM FOR INTERNAL TRANSPORT AND COMMUTING.

The city bike is a product for the future. We believe we are on the right track.

Our starting point of developing the Smart City Bike was demands of users, advertisers, operators and the board/the city authorities. It was not available technology. Therefore we have developed a lock based on advanced technology but on other principles than other locking systems.

With help from the pilot project in Sandnes and Stavanger, the city next to Sandnes, we want to test the Smart City Bike concept in full scale in three different areas.

The pilot project will be running in 1999 and 2000. We want to be sure that the system is satisfactory in every respect before we spread it into other cities. The results from this pilot project will be available for everybody.

We hope that The Smart City Bike concept can give "the city bike movement" a new success.

Success will convince sceptical people that city bikes are a sustainable transport system for future. It is therefore important that we use all our knowledge and experience to make sure that the city bike concept satisfies all the demands from the involved groups. Success will increase the good attitudes to the city bikes.

On our work shop we want to show you the city bike and the locking system.

We want to show you the Smart City Bike, and we will demonstrate how the Smart City Bike satisfies different demands. We will also give some written information about the city bike and the locking system.

We have learned a lot from our first three years with different city bike systems.

Based on our experience the city has developed The Smart City Bike system, witch satisfies our demands. We have made quite a lot of demands by asking and listening to different groups of users, advertisers, operators, authorities. We now believe that The Smart City Bike system satisfies all groups which are involved:

The user:

The city bikes are very available for the subscribers. It is easy to become a subscriber.

It is easy to understand how to use the city bike and the city bike system.

There are no boarders. Use the city bike wherever you want, but put it back into a rack after use. You can use the electronic lock as a private lock for a while when you are shopping, in a meeting etc. If you do not unlock the city bike in time, other subscribers can unlock it.

If the user loose his key, It is easy to stop the key functioning.

The advertiser:

The City Bike has lot of space for advertising .

The advertisers can get more effect from advertising by buying subscriptions to employees, customers, partners etc

The operator:

It is easy to collect information which give us users profiles.

With user profiles it is easier to improve the system Who is using the city bikes? From where. When? Of course, the information we are collecting have to be into the frames which are given from the authorities.

We can handle misuse without doing much efforts.

The lock can register some kind of misuse. You will get "penalty-points" if you are using the city bike for a longer time than what is legal. To many "penalty points" will stop the key functioning, than you are not a subscriber any more.

We want to "forgive" people which misuse the system once or twice.

After some time without getting penalty points, your old points will be stroke off the register

The city authorities/the board:

The system is flexible and can suit the conditions in the city: We can easily increase the city bike system step by step.

Start in a small scale, and expand when companies and inhabitants ask for it. The racks for Smart City Bikes are very simple.

They can easily fit the design of other city furniture in the city. It is easy and cheap to establish new racks, and it can be easy to move a Smart City Bike rack from one place to another place in the city. The system is flexible.

It can differ from one city to another. The board can decide changes in infrastructure and frames without making heavy economic consequences.

The board has to make decisions :

- The city bike infrastructure. How many and where do you want city bike racks?
- The level of technology. You can collect information by visiting the racks or by sending information to a central station
- The prise of subscriptions. What is the price for a subscription for one year?
- For how long can a subscriber have the city bike at her/his disposal before she/he gets penalty points?
- How many penalty points can a subscriber get before the key stops functioning? · When do subscribers loose their penalty points?
- What can we offer tourists? Getting free subscriptions for a limited time by paying deposit?



WHEELS FOR ALL : DEVELOPING PROVISION FOR DISABLED CYCLISTS

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ENGLISH

WHEELS FOR ALL : DEVELOPING PROVISION FOR DISABLED CYCLISTS

Wheels for All: A project developed over the past three years to meet the absence of cycling opportunities for disabled people. Advances in the design and manufacture of adapted machinery, particularly the hand cycled wheelchair, means that people with physical and learning difficulties are able to enjoy the pleasure of cycling.

Experience has been gained in the requirements of the site and also the marketing and promotional work needed to encourage use of the facility.

This initiative has been a considerable success with over thirty cycles purchased and a network of nine hire centres opened, it is hoped that this paper will stimulate interest in repeating this project in other areas.

DEUTSCH

RÄDER FÜR ALLE: DIE ENTWICKLUNG VON SPEZIELLEN VORKEHRUNGEN FÜR BEHINDERTE RADFAHRER

„Wheels for All“ ist ein Projekt, das in den letzten drei Jahren entwickelt wurde, um das Fehlen von Radfahrmöglichkeiten für Behinderte auszugleichen. Fortschritte bezüglich der Konzeption und Herstellung behindertengerechter Fahrzeuge, insbesondere des handbetriebenen Rollstuhls, bedeuten, daß Menschen mit körperlichen Behinderungen oder Lernschwierigkeiten in der Lage sind, das Vergnügen des Radfahrens zu genießen.

Bezüglich der Erfordernisse an den Standort und auch in Hinblick auf das Marketing und die Werbung, die erforderlich sind, um zur Nutzung der Einrichtung zu ermutigen, wurde einiges an Erfahrung gesammelt.

Diese Initiative war ein beträchtlicher Erfolg. So wurden über dreißig Fahrräder angekauft und ein Netz von neun Verleihzentren eröffnet. Es bleibt zu hoffen, daß dieses Referat Interesse wecken wird, dieses Projekt auch anderswo umzusetzen.

SLOVENSKO

KOLESA ZA VSE (WHEELS FOR ALL): RAZVOJ INFRASTRUKTURE ZA INVALIDNE KOLESARJE

Projekt Kolesa za vse se je razvijal v zadnjih treh letih z namenom, da omogoči razvoj manjkajočih priložnosti za kolesarjenje tudi za invalidne osebe. Napredek v oblikovanju in izdelavi prilagojenih mehanizmov, posebej invalidskega vozička, ki se ga lahko kolesari z rokami pomeni, da lahko tudi ljudje s telesnimi in učnimi težavami uživajo v kolesarjenju.

Pridobili smo izkušnje o potrebni namestitvi, pa tudi trženje in promocijsko delo sta morala opogumiti ljudi k uporabi teh naprav.

Ta iniciativa je pomenila velik uspeh, saj je bilo prodanih več kot 30 koles in odprta je bila mreža 9-ih izposojevalnih središč. Upamo, da bo prispevek spodbudil zanimanje za ponovitev tega projekta na ostalih območjih.

FRIDAY

WHEELS FOR ALL: DEVELOPING PROVISION FOR DISABLED CYCLISTS

Cycling Project for the North West (CPNW) is a registered charity based in Manchester, UK. Our aim is to promote cycling for all, and to work for the safety and well being of cyclists. CPNW currently has 6 members of staff (5 full time and 1 part time). Our funding comes from a variety of sources, primarily the National Lottery Charities Board, the Department of Environment, Transport and the Regions, various charitable trusts, corporate sponsorship and fee earning work. CPNW undertakes a wide range of projects related to the promotion of cycling, publishing maps and leaflets, advising companies and the public on cycling opportunities and facilities, organising a forum of cycle campaign groups, organising cycle events taking every opportunity to work in the interests of all cyclists. For the past three years CPNW has been active in developing an initiative we call Wheels for All essentially the idea of Wheels for All is to offer disabled people the opportunity to participate in cycling where previously such opportunities did not exist. CPNW has developed the scheme to a stage at which we have purchased 45 specially designed cycles, these are available to hire from 10 centres ranged across the north west of England. We have spent a great deal of time and effort on this scheme, indeed it has grown to such an extent that it has become necessary to employ a member of staff who will be responsible for the successful management of the existing scheme and the continued growth and further development of the concept.

BACKGROUND

There has been a long history of adaptation of the bicycle and bicycle technology to meet the mobility needs of disabled people. After the First World War there were a large number of people with disabilities, and it became quite common to join bicycle technology, in the form of cranks and chain drive to wheelchairs. This created a chair which was able to travel faster than a rim pushed chair. This technology was largely forgotten, especially as electric and other powered mobility aids were developed. More recently the idea of joining together wheelchair and cycle technologies to create a new form of transport has been rediscovered. Contact with a manufacturer of such equipment in the UK led to the development of the Wheels for All project. Other forms of cycling are also available to disabled people. People with artificial limbs, or limited use of some limbs are able to use conventional cycles with minor modifications to the controls. Those with visual impairments are able to be very successful partners on tandems and there is a long tradition of cycling groups made up of sighted tandem pilots riding with partially sighted partners.

The value of cycling to disabled people is considerable. Firstly they are able to enjoy the independence of self propelled mobility which attracts many able bodied people to cycling. Secondly disabled people have traditionally form suffered from a lack of exercise which has compounded their health problems. Lack of opportunities and low expectations of ability and independence have created a culture of disability in which disabled people have led very sedentary lives, this is particularly true of people who are institutionalised in special schools, hospitals and residential homes. Cycling offers a dramatic contrast, a freedom and independence of movement and a speed which is dramatically different from that which can be achieved by pushing a wheelchair. There is a considerable body of work which points to the beneficial effect of 'therapeutic recreation' which has the dual effects of improving both overall health and psychological well being. The use of a hand cycle allows the benefits and pleasures of cycling to become a part of the every day routine of the disabled person.

FOUNDING WHEELS FOR ALL

In 1995 the Cycling Project was commissioned to produce a leaflet highlighting cycling routes and facilities in the north west of the UK. During research for that project we discovered that there were very few opportunities for disabled people to cycle independently, or with their friends and families. There were a few 'Duet' bikes around in which a disabled person could be taken as a passive passenger, but this sort of experience has very relatively little to offer the disabled person. At around this time the project became aware of a manufacturer (Chevron of Liverpool) who were making a product which allowed a wheelchair to be converted into a hand cranked cycle. It was then that we could see that it might be possible for us to raise funds to purchase some of this equipment and make it available for hire by disabled people. The plan was to acquire a fleet of handcycles which we would loan to hire centres which would make them available to the public. A small hire fee would be charged to cover insurance and maintenance, but the cost would be kept down in order to allow as many people as possible to hire the cycles. Fundraising has been a crucial part of the success of the project, from the very beginning CPNW has been successful in raising funds to buy equipment, more difficult has been finding the revenue funding needed to pay for the time necessary to properly to develop the scheme. By careful management of time and resources it has been possible to build up Wheels for All to the point where we have 45 cycles and 10 hire centres, making the largest fleet of handcycles in the UK. Just as it seemed like it was getting to big for us to control properly we have been fortunate enough to receive funding for a Development Officer to work full time on the project for the next three years. This will be a major benefit as it will allow us to devote much more time to encouraging the use of the equipment, and seeking out new partners, as well as allowing other CPNW staff to focus on other areas of our work.

DEVELOPMENT OF WHEELS FOR ALL THROUGH WORKING WITH PARTNERS

From the very early days of the project it became clear that CPNW would need to work with partner organisations in order to make WFA work. CPNW has neither the space nor the staff to run a hire service from its own offices, therefore we sought out other organisations who would be interested in hosting the hire bikes. We have worked with a range of organisations each of which has some unique feature which makes them an attractive partner to work with. Partners include National Park Cycle Hire centres, a residential holiday centre, sports development units, country parks, leisure centres, a disabled persons training organisation. There are certain key features we look for when assessing potential new partners, these include permanent staffing, secure storage facilities, a safe and fully accessible track on which to cycle, accessible facilities for disabled visitors, an ability and willingness to take on minor repairs and maintenance. The most important asset any partner can have however is undoubtedly an enthusiastic and understanding staff who are keen to provide a service to disabled visitors and able to spend time in assisting them. As the handcycles are intended to be available for use by beginners we expect hire centres to be directly linked to a fairly flat and well surfaced cycle trail. Gradients of more than 1 in 12 are too strenuous for the beginner, and if the surface of the trail is loose or rough a lesser gradient is preferred. The hand cycles are driven via the front wheel which means that traction becomes a problem on loose surfaces, this can be overcome by an experienced rider but for the novice a flat track is needed. We have been able to link up with a wide range of willing partners because the host partners benefit from being able to provide a range of equipment and a service to disabled people, at minimal cost to themselves.

CHALLENGES

During the development of the project we have overcome a few problems. Early in the project we realised that insurance was going to be an important factor to get right. The equipment has been insured against theft, and for accidents involving third parties, however it has proved impossible to insure against equipment being stolen by the person hiring the machines, although we hope this is unlikely to be a problem. We have given a lot of thought to safety issues, we ask the hire centre to explain the controls to the hirer and demonstrate safe use of the equipment, helmets are available to all hirers, although we do not insist on their use. As the fleet of equipment has grown so has the insurance bill, however income from hiring is currently covering this cost. When fundraising we do ask supporters for sufficient funds to purchase the equipment and also to cover insurance for three years, it is usually possible to incorporate this into the nominal purchase cost of the equipment. The management of the project has become more demanding as the number of sites and amount of equipment has grown. During the summer months we are asked to attend many open days and events with the equipment, this is very demanding in terms of staff time and can be expensive if a van has to be hired to transport equipment. We have had considerable debate about whether to extend the WFA centres beyond our north west boundaries. Eventually deciding that we should consider any expression of interest from partners, but only with a very careful view to travel costs, and recently we have been asking partners for a donation toward set up costs. The recent funding of a full time development officer for Wheels for All is a major breakthrough, which will allow us to expand beyond the original vision of a small network of hire centres and further develop the visits to schools and supervising groups, which we see as being an important method of encouraging more use of the handcycles.

HANDCYCLING AND THE FUTURE

The growth of Wheels for All has rather taken the Cycling Project by surprise, the demand for equipment has been great, and some high quality partnerships have been put together. We are still being contacted by potential new partners. Our plans for the future include consolidating at the existing hire centres by improving the service that we are able to offer, with better publicity, more time at each centre by Cycling Project staff, more school visits and branching out from concentrating on hand cycles to a wider range of adapted cycle equipment.

In January 1999 the first meeting on the 'Handcycling Association of the United Kingdom' (HCAUK) was held, under the auspices of the British Wheelchair Sports Federation. It seems likely that this organisation will drive progress in relation to sporting handcycling, but will also take an interest in promoting recreational cycling and look at technological advances and access issues. CPNW will work closely with the HCAUK.

CPNW has been commissioned to write a detailed report on cycling and disabled people, which will examine not only our experience of Wheels for All, but also look in more detail at the health benefits of cycling and at other forms of adapted cycling and equipment. The report will be published later in 1999, and anyone wishing to receive a copy should contact the author at the Cycling Project.

CYCLING AND THE NEEDS OF DISABLED PEOPLE - THE LEEDS EXPERIENCE

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Cathy has a BSc (Hons) in Environmental Science and is currently undertaking an MSc in Environmental Impact Assessment.

CYCLING AND THE NEEDS OF DISABLED PEOPLE -THE LEEDS EXPERIENCE

The paper examines some of the issues of concern to pedestrians particularly those with disabilities with regard to cycling schemes. Leeds has seen an increase in cycle facilities as a consequence of its Transport Strategy and other transportation schemes which encourage cycling as an alternative to the car. The Strategy also promotes access for all and increases mobility of disabled people by considering all their needs when promoting new schemes. In principle the two groups are seeking the same goals; better facilities and changing the emphasis from the car user to other more vulnerable users. The paper explores the areas of conflict that have arisen and the solutions that have been sought in Leeds.

RADFAHREN UND DIE BEDÜRFNISSE BEHINDERTER - DIE ERFAHRUNGEN VON LEEDS

Dieses Referat beschäftigt sich mit einigen der Anliegen von Fußgängern und insbesondere von Behinderten in Zusammenhang mit Fahrradprogrammen. In Leeds wurde infolge der Verkehrsstrategie der Stadt sowie anderer Programme zur Förderung des Fahrrads als Alternative zum PKW eine Zunahme an Radverkehrsanlagen verzeichnet. Die Verkehrsstrategie fördert gleichzeitig den Zugang für alle und vergrößert die Mobilität Behinderter durch Berücksichtigung all ihrer Bedürfnisse bei der Förderung neuer Programme. Grundsätzlich streben beide Gruppen nach denselben Zielen: bessere Einrichtungen und eine Verlagerung der Aufmerksamkeit vom Autofahrer auf andere, schwächere Verkehrsteilnehmer. Das Referat untersucht die Konfliktbereiche, die sich herauskristallisiert haben, sowie die in Leeds angewandten Lösungen.

KOLESARJENJE IN POTREBE INVALIDNIH OSEB - IZKUŠNJE IZ LEEDSA

Prispevek govori o nekaterih problemih pešcev, posebej invalidov, z ozirom na kolesarske projekte. Kot posledica Prevozne strategije in ostalih prevoznih načrtov, ki podpirajo kolesarjenje kot alternativo avtomobilu, je v Leedsu prišlo do porasta kolesarske infrastrukture. Strategija podpira tudi dostop za vse in povečuje mobilnost invalidnih oseb z upoštevanjem vseh njihovih potreb. V načelu si obe skupini prizadevata za isti cilj: izboljšanje infrastrukture in spremembo poudarka iz uporabnikov avtomobilov k bolj ranljivim udeležencem v prometu. Prispevek raziskuje sporna področja, ki so se pojavila in rešitve, ki so jih našli v Leedsu.

CYCLING AND THE NEEDS OF DISABLED PEOPLE - THE LEEDS EXPERIENCE

INTRODUCTION

This paper examines some of the issues that are raised for pedestrians, particularly those with disabilities, from the increase in cycling schemes and cycling facilities in new traffic schemes. When looking at people with disabilities, I am going to be concentrating on those with sensory impairments i.e. those who are visually impaired including blind and partially sighted people and those with a hearing impairment along with elderly people and disabled people who can walk but may not be steady on their feet. I shall give some background as to why this has become an issue in Leeds for disabled people. In principle the two groups want the same thing. That is adequate and safe facilities. However this cannot always be achieved for various reasons and compromises have to be sought. The paper will then go on to examine what solutions and compromises are available and those that have been used in Leeds by looking at examples.

BACKGROUND

Leeds has seen an increase in cycle facilities as a consequence of its Transport Strategy. Traffic schemes are attempting to encourage cycling as a viable mode of transport and an alternative to the car. For some time now the UK Government has been trying to encourage greater use of the bicycle as a viable means of transport. Transport Package bids have been more successful if they have contained a strong emphasis on cycling. This will continue to be the case in Local Transport Plans, as stated in the recent Transport White Paper (July 1998).

The Leeds Transport Strategy also promotes access for all and increased mobility of disabled people by considering all their needs when promoting new schemes. This is being further encouraged again by the Transport White Paper but also by the Disability Discrimination Act 1995. Part 3 of the Act, which comes into force this October states that reasonable adjustments should be made to ensure equal access to services and when providing a service, disabled access should not be made worse than it already is. The Act can be applied to the City Council providing a cycling scheme running near pedestrian facilities. They must ensure that disabled access is not made worse by a scheme than it already is and hopefully will see it as an opportunity to improve facilities for pedestrians as well.

Levels of cycling in the UK are low compared to other European countries. In Leeds the percentage of the population using cycles to travel to work is thought to be 1.3% (1991 Census figures). This is typical of large cities like Leeds which are heavily trafficked and have high speed roads. In general cyclists in Leeds have been at the bottom of the pile in terms of space allocation on the highway network. This has probably led to frustration and the need for the few cyclists, to survive on the road network, by being aggressive, on occasions disobeying road traffic signs and illegally using pavements. So it is against this background that in recent years Leeds has been developing a cycling strategy. Ideally, cyclists would go on the road network if vehicle speeds were low and priority was given at junctions. However if more people were encouraged to cycle at present there would be more accidents. To encourage sufficient numbers of people to cycle so that they would dominate the rest of the traffic and thus calm the roads is not something that could be easily achieved with the present small cycling population. So there is the problem of how to encourage more people to cycle and to do it safely.

Basically the starting point for both groups are adequate segregated facilities, particularly in city centre environments. For cyclists this means segregation from road vehicles and pedestrians on a cycle track and for disabled people, separate footpaths with adequate widths and free from obstacles. However in certain instances due to various factors such as lack of space, money or commitment to reduce road capacity in favour of cyclists, wide footpaths/footless may be seen as the answer or quick-fix solution by providing some sort of facility for cyclists, whether it be shared or segregated. It is here that disabled people feel that cyclists are being encouraged to encroach on traditional pedestrian areas potentially putting the safety of pedestrians at risk.

ISSUES OF CONCERN FOR DISABLED PEOPLE

There are various issues of concern to disabled people and these include shared facilities, the adequacy of segregated facilities, cycle parking facilities causing obstructions and cyclists on the carriageway at pedestrian crossings. I am going to concentrate on the issues that surround shared facilities and what constitutes adequate segregated facilities.

Disabled people are often concerned when highway authorities consider changing a footpath to a shared cycle/pedestrian facility. The disabled person feels at risk in that when walking on a shared cycle/pedestrian facility they cannot guarantee that they will not come across a cyclist. Firstly a disabled person may be concerned that a cyclist may run into them and cause serious injury. In the UK although there have not been many pedestrian fatalities there are probably many more accidents involving cyclists and pedestrians that have caused a serious injury. However there are not very good records of these because the police only get involved if there has been a fatality. Bicycles are not registered or insured in the UK and this also makes it hard to keep track of the number of accidents. Secondly there is the perceived fear of being run into by a cyclist and this to a disabled person tends to be increased because of their disability. When a cyclist goes past a visually impaired person or a hearing impaired person, there is very little warning to that disabled person that the cyclist is approaching because of the quiet nature of bicycles. This can be very alarming to the disabled person if the cyclist goes past at speed. The cyclist may think that there is plenty of room next to the person and may not be aware of the person's disability and the possibility that the person may move suddenly in another direction, thinking they are on a footpath. Cyclists face extreme hazards whilst using roads, however it should be noted that the results of an incident between a cyclist and a disabled person can cause as severe a problem due to the additional vulnerability of the disabled person. Often fear of being hit by a cyclist will intimidate a disabled or elderly person and may stop them going out at all.

Methods of Segregation

By using segregated routes disabled people can gain some reassurance that cyclists won't be there and for cyclists pedestrians hopefully won't get in their way. For disabled people this means some sort of physical barrier including guard railing, height differences and grass verges or preventative paving verges.

Using guard railing the two groups are clearly separated as long as it is made clear which is the correct side to be on at the start of the route. However guard railing can be quite restrictive in that the pedestrian could be trapped between this and the back of footpath for some distance, if there are no gaps in the railing. However if there are too frequent gaps, the railing may be seen as a challenge to cyclists to weave in and out of and thus becomes pointless.

The use of height differences in the form of a normal 125mm kerb face, down from the footpath to the cycle track and then again down to the carriageway can work as an effective barrier. If someone steps down the kerb onto the cycle track from the footpath, they are given the indication that they are stepping down on to a carriageway and therefore stepping down into an area of danger. This is the same message given to a disabled person stepping down onto the carriageway from a footpath. Conversely the cyclist is unlikely to go up the kerb on the footpath side and is also protected from danger of vehicles by a kerb between the cycle track and the carriageway. Alternatively the cycle track and carriageway may be at the same level separated by a narrow raised area of paving at footpath level. In some instances here it may be acceptable to go to a height difference of 50mm to allow easier cleaning of cycle track and if there is insufficient width this allows for peddles not catching on the kerbs.

Using grass verges and strips of preventative paving or textured paving can also effective segregation, however there needs to be more space available to allow this.

Other methods that have been used in the UK involve the use of a raised white line and tactile paving. This involves a raised white line made in general from thermoplastic material separating the cycle track and the footpath. Ribbed tactile paving is laid in different directions to identify which side the pedestrian and cyclists are meant to be on. However there have been problems with the white line, in that it is difficult to lay and maintain at the recommended height of 20mm. It is also now felt by many partially sighted people using long canes that this is difficult to identify and is no deterrent to cyclists against using the pedestrian area. In some instances the raised white line has not been used at all and instead a white line has been painted on the surface giving little or no vertical definition. This method is only recommended if the other physical methods are not possible and only after local consultation.

POLICY IN LEEDS

The development of the cycling strategy in Leeds was seen as an opportunity to set down some general principles for considering the needs of disabled people when providing cycling facilities.

- In the city centre pedestrianised areas should not be shared with cyclists. Cyclists should dismount and walk through these areas. There should be sufficient parking provision to encourage people to leave bicycles at the edge of pedestrian areas.
- When cycle routes are being created they should have a physical separation in the form of a
 - barrier or height difference.
- In exceptional circumstances where there are restrictions such as width, environmental constraints, cost etc. segregation in the form of a white line or unsegregated short routes can only be considered in consultation with representatives from blind and partially sighted groups. In Leeds this is through representatives of the Access Advisory Group. This group has representatives from various disabilities and elected members who have a particular interest in access matters.

EXAMPLES FROM LEEDS

There follows various examples of how the needs of cyclists and disabled people have been considered in schemes in Leeds.

i) High Occupancy Vehicle Lane (HOVL)

There are cycle facilities on the experimental High Occupancy Vehicle lane which runs on part of the A647 into Leeds. Throughout most of the scheme there was opportunity to incorporate cycling facilities on the carriageway due to its width. However at certain points it was felt that there was insufficient room on carriageway and cyclists would be at risk by being there. So on one section the cycle track comes up onto the old footway and a new footway at a higher height has been created for pedestrians. Further down the scheme where the old footway was wide a cycle track has been created on the footway separated by a barrier in the form of railings. Early designs of this scheme had suggested the shared use of the footway but this was felt unacceptable by pedestrians and in particular disabled people. There was in depth consultation which resulted in these two forms of segregation being used.

ii) City Centre

In the City Centre cycle lane contraflows have been created on carriageway. This involves a cycle lane running at carriageway

level against the flow of traffic, separated from the traffic by a narrow raised area of paving. In general these have worked very well and have not raised any issues for disabled people. However some able bodied pedestrians crossing these have found them confusing. In these instances it is now felt that the cyclists do not need the physical barrier from the vehicles so in future schemes these are not going to be included and therefore will hopefully not confuse the pedestrians crossing. However in this particular instance we would want to encourage them to cross at the pedestrian crossing areas.

This particular contraflow lane then comes to a controlled pedestrian crossing point. Here signals hold up the cyclists and vehicles coming in the opposite direction. This has not worked so well for cyclists in that most pedestrians wait in the cycle lane until the rest of the traffic stops. This then blocks the cycle route. Visually impaired pedestrians however wait in the correct place on the tactile paving and wait for the tactile indicator to give the all clear to cross. In this particular area there is an opportunity to redesign the crossing. It is to be changed to allow the cyclists to come up to the footway level and cross informally behind where the pedestrians wait.

iii) Suburban

An example of a scheme in a semi-urban area is the Kirkstall to Beckett's Park Cycle route. This scheme has not been built yet but is a good example of a non city centre scheme subject to various environmental and budgetary pressures, put together after detailed consultation with local disabled people. The various environmental constraints include trees, narrow footpaths with overgrown shrubs, a narrow underpass and recreational land. There was much pressure to use as little new land as possible particularly on the parts of the route running by recreational land and the budget was fairly small. So in the main where it is possible there will be a two tier footpath/cycleway. However at pinch points there will be signs saying cyclists beware of pedestrians, barriers to slow cyclists down going through the underpass along with improved lighting and the inclusion of railings at tight corners. There will also be provision for maintenance to ensure shared areas do not get overgrown and the widths do not get too narrow.

iv) Miscellaneous

The use of white lining segregation can be seen in various places in Leeds. In general all these schemes exhibit the problem of poorly laid white lines with an undetectable profile. Such a scheme has existed for sometime in the city centre. This is a short route over the inner ring road on Great George Street. Other routes incorporating this type of segregation can be seen on the outer ring road. These are the schemes in Leeds that have raised the issue of types of segregation and led to alternative methods being sought.

CONCLUSION

To achieve the aim to have a more inclusive society, good design which incorporates the needs of all must be sought. These needs can only be identified by listening to cyclists and disabled people themselves. Although much can be achieved through good design and consultation probably more could be achieved through changing the perception of cyclists by disabled people and changing attitudes and behaviour of some cyclists. To overcome some of these issues British society needs to respect cycling as a serious form of transport. More cycling in Leeds would help justify more cycle facilities which in turn would make pedestrians learn to expect cyclists on appropriate facilities. More cyclists could also help create more space on the carriageway. Hopefully when there are more cyclists coming from different parts of society i.e. age ranges and gender, this will also generate more respect between pedestrians and cyclists. Cycle education and training needs to help in this process to overcome some of the fears raised by disabled people by including some disability equality and awareness training.

Other issues which I feel would help in eliminating fears include the compulsory use of bells by cyclists to give people warning of an approaching cycle. The use of licensing and insurance, as in some other European countries would also help to ensure responsible cycling. A better national transport strategy that addressed the rights and needs of all road users would also help to resolve many issues.

THE "TIME AREA" CONCEPT

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THE "TIME AREA" CONCEPT

Urban ground is rare in city centres, and congestion due to motorised traffic is increasing. The different modes of transport does not need, to move and to park, the same amount of space. The space occupancy for each mode and each sort of trip can therefore be calculated, linking dynamic (moving) and static (parking) status, under the same unit, the $m^2.h$. This time-area concept has been developed in the 70's by a French engineer, Marchand. This concept allow to measure the relative efficiency of each mode of transport. The bicycle takes up to four times less space than a car, and the "ground saved" is more important when parking than moving. Some graphical examples will allow to visualise the main findings.

DAS „ZEIT-FLÄCHE“-KONZEPT

In Stadtzentren ist Grund und Boden rar, und die Verstopfung durch den motorisierten Verkehr nimmt zu. Allerdings benötigen nicht alle Verkehrsmittel gleich viel Platz zur Fortbewegung und zum Parken. Die von jedem Verkehrsmittel für jede Art von Fahrt beanspruchte Fläche lässt sich deshalb berechnen, wobei man den dynamischen Zustand (Fortbewegung) und den statischen Zustand (Parken) in der selben Einheit, nämlich m^2h angibt. Dieses „Zeit-Fläche“-Konzept wurde in den 70er Jahren vom französischen Techniker Marchand entwickelt. Dieses Konzept erlaubt es, die relative Effizienz jedes Verkehrsmittels zu messen. Das Fahrrad verbraucht bis zu vier mal weniger Fläche als ein Auto, wobei die „eingesparte Bodenfläche“ beim Parken signifikanter als beim Fahren ist. Einige graphische Beispiele werden die wichtigsten Erkenntnisse veranschaulichen.

KONCEPT »ČASOVNE POVRŠINE« (TIME AREA)

V središčih mest so urbana področja redka in povečuje se prenatrpanost zaradi motoriziranega prometa. Različna prevozna sredstva ne potrebujejo enako velikega prostora za premikanje in parkiranje. Velikost prostora za vsako prevozno sredstvo in vsako vrsto krajšega prevoza se lahko izračuna s povezavo dinamičnih (premikajočih se) in statičnih (mirujočih) razmerij z enako enoto m^2/h . Ta koncept »časovne površine« (Time area) je v 70-ih letih razvil francoski inženir Marchand. Koncept omogoča merjenje relativne učinkovitosti za vsak način prevoza.

Kolo zavzema do štirikrat manj prostora kot avto in "prihranjen prostor" je pomembnejši pri parkiranju kot pri premikanju. Za lažjo predstavo glavnih ugotovitev bom uporabila grafične primere.

TIME AREA OCCUPANCY FOR DIFFERENT MEANS OF TRANSPORT

Congestion in West European cities has increased dramatically over the past 50 years, due essentially to the increase in the number and use of motor cars. However, this means of transport requires a great deal of space, both to move (vehicle surface and distance between vehicles) and to park. On the other hand, the bicycle is a means of transport which requires little space, in any case less than a car. It is interesting to assess the efficiency of each mode of transport in relation to one major criterion : ground area occupancy. It is then possible to look for a better distribution of the space allocated to traffic for each mode of transport, in order to maximise the efficiency of the traffic system as a whole.

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DEFINITION OF THE CONCEPT

The concept of "time-area occupancy" was developed for the first time in the late 70's by a French public transport engineer, Marchand. The novelty of this concept is that it takes into account two different variables : the space needed for traffic and for parking, and also the time factor. The common unit used to measure the time-area occupancy is the square meter per hour (m².h). Until then, the only space occupancy measurement was for moving vehicles and, as we will demonstrate, this comparison is the least unfavourable to the car.

STATIC TIME-AREA OCCUPANCY : PARKING

Bicycles

A parked bicycle needs about 1 m² to park (50 cm width x 2 m length, including clearing area). This surface can be reduced to 0.7 m² if cycle racks are used, thus partly raising the bicycles parked, and up to 0.5 m² if bicycles are superimposed. This last solution is particularly useful in places where many bicycles need to be parked for a long time (half a day at least), e.g. schools or railway stations.

We will consider that the occupancy rate of a bicycle is 1, as it is significantly higher only in countries where cycling is very common and carrying children on seats widespread, e.g. in the Netherlands.

Cars

For kerb parking, the average space occupancy for a car is 10 m² (2 m x 5 m). Clearance space is taken on the traffic lanes. In underground or multi-storey car parks, access ramps and alleys must also be taken into account. As a general rule, 25 m² per parking space is the value adopted. In this way, cars are parked off-street, which should contribute to reduce the street space provided to cars, but all too often, these car parks attract more cars, by offering greater parking possibilities, and hence increase total car time-area occupancy by increasing car flows.

Considering that the average occupancy rate of a car at peak hours is 1.25 people per car, the space occupied per person is therefore 8 m² (10 / 1,25), eight times more than for a bicycle.

Pedestrians and buses

It can be considered that pedestrians do not park, in the literal sense. If they stop, it is usually for very brief periods (e.g. waiting for traffic lights). Their time-area occupancy for parking is therefore nil.

The only means of public transport we will consider is the bus, as it is the most common form. It is possible to consider bus time-area occupancy to be nil, as during the day buses do not really park : they just wait for a few minutes at the end of their line and then start to move again. Night-time bus parking is usually located outside the city centre, where there is more space available at a lower cost. And buses carry so many passengers that space occupancy per passenger while parking is low.

DYNAMIC TIME-AREA OCCUPANCY : MOVING

While moving, every vehicle occupies a certain amount of space : its surface area, but it also needs some free space in front of it, for the user's safety (braking distance at least) and comfort.

Bicycles

Average distance between two moving bicycles can be very short. The extreme case is that of a bunch of racing cyclists, who are only a few centimetres from one other. A bicycle travelling at 20 km per hour needs about 10 m to stop. Considering that urban cyclists ride at slower speeds, 5 m seems to be a good minimal distance between two bicycles (i.e. 7 m including the bike length). The average speed of an urban cyclist has been considered to be 14 km/h, as has been shown in many studies and surveys ; and a cyclist needs a 1.2 m virtual lane width to be able to ride in sufficient comfort. Therefore, the average time area occupancy of a cyclist in traffic for a 1 km trip is : [(5 m inter-vehicle space + 2 m bicycle length) x 1.2 m width] / 14 km/h = 0.6 m².h.

Cars

The time-area occupancy for a car in traffic can be calculated in the same way. It can be considered that a car's average speed is 30 km/h in cities. At this speed, the braking distance is 15 m. The width of the lane needed is about 3 m. Then, the average time-area occupancy for a car for a 1 km trip is :

$[(15 \text{ m inter-vehicle space} + 5 \text{ m car length}) \times 3 \text{ m width}] / 30 \text{ km/h} = 2 \text{ m}^2\text{.h}$. If the occupancy rate is 1.25 people per car, the average time-area occupancy per car occupant is then $1.6 \text{ m}^2\text{.h}$, i.e. 2.7 times more than for a cyclist. The difference of time-area occupancy in traffic is not very much higher for a car than for a bicycle, mainly due the lower speed of bicycles.

Pedestrians and buses

Pedestrian time-area occupancy is very small. It can be estimated at $0.25 \text{ m}^2\text{.h}$ for a 1 km trip (2 m length between two pedestrians \times 0,5 m virtual lane width, with a speed of 4 km/h).

Buses in ordinary traffic also use very little time-area :

$[(15 \text{ m inter-vehicle space} + 15 \text{ m vehicle length}) \times 3 \text{ m width}] / 10 \text{ km/h} = 9 \text{ m}^2\text{.h}$, i.e. $0.3 \text{ m}^2\text{.h}$ per person if the average occupancy rate is 30 passengers per bus.

TOTAL TIME-AREA OCCUPANCY

Formulation

The ground occupancy O for parking p per person for a mode i and for a duration h is (in $\text{m}^2\text{.h}$) :

with : p_i = surface to park the vehicle (in m^2)
 h_i = duration of parking (in hours)
 n_i = occupancy rate of the vehicle (in number of persons)

$$O_p = \frac{p_i \cdot h_i}{n_i}$$

The ground occupancy O for moving traffic t per person for a mode i and for a duration h :

with : d_i = distance between 2 vehicles, including length of one vehicle (in m)
 w_i = width of the traffic lane (in m)
 k = length of the trip (in km)
 s_i = average speed (in km/h)
 n_i = occupancy rate of the vehicle (in number of persons)

$$O_t = \frac{d_i \cdot w_i \cdot k}{s_i \cdot n_i}$$

The total time-area occupancy O_i per person and for a mode i is therefore (in $\text{m}^2\text{.h}$) :

$$O_i = O_p + O_t \quad \text{i.e.} \quad O_i = \frac{p_i \cdot h_i}{n_i} + \frac{d_i \cdot w_i \cdot k}{s_i \cdot n_i}$$

This formula can be used for all trips, whatever the mode of transport. It makes it possible for the time-area occupancy for a succession of trips with different purposes, and different durations for parking, to be followed.

Examples

An estimation of time-area occupancy has been made for different means of transport, for a 1 km trip, with different durations of parking and different purposes.

With these values, we have drawn up a number of graphs, which enable the time-area occupancy for the different modes of

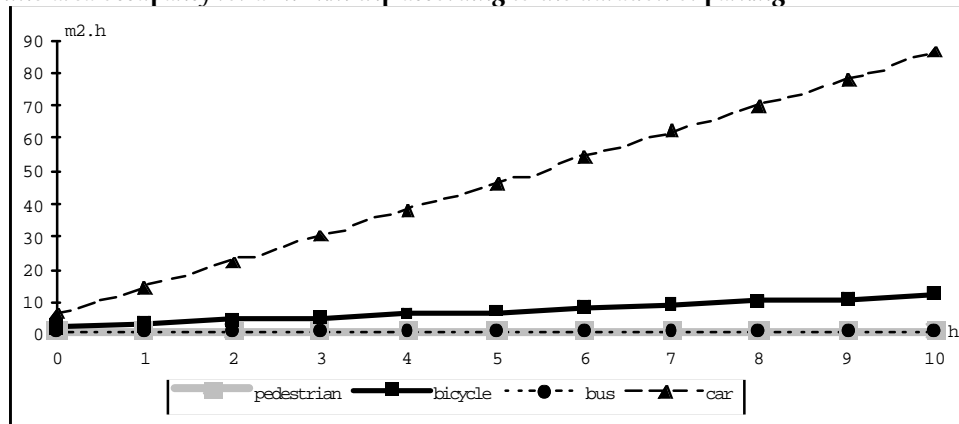
Table 1 : Total time-area occupancy for a 2x1 km trip

	parking ($\text{m}^2\text{.h}$)	speed (km/h)	lane width (m)	occupancy rate	dist between vehicles (m)	in traffic ($\text{m}^2\text{.h}$)	total ($\text{m}^2\text{.h}$)
Pedestrian	0	4	0.5	1	2	0.25	0.25
Bike / work (9 h)	9	14	1.2	1	7	0.6	10.2
Bike / shopping (1h30)	1.5	14	1.2	1	7	0.6	2.7
Car / work (9 h)	72	30	3	1.25	20	1.6	75.2
Car / shopping (1h 30)	12	30	3	1.25	20	1.6	15.2
Bus in traffic	0	10	3	30	30	0.3	0.6
Bus in lane (20 / hour)	0	15	3.5	40	750	4,4	8.8

transport to be visualised.

As it can be seen on graph 1, pedestrians and buses do not need any space to park, so their area occupancy is constant. On the other hand, car area occupancy increases very quickly with the duration of parking.

Graph 1 : Time-area occupancy for a 2x2 km trip according to the duration of parking

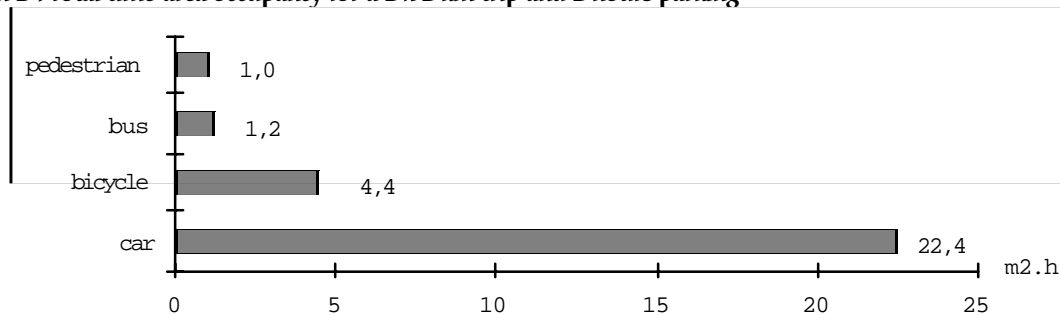


For a 2 hours parking period, graph 2 shows that a bicycle is five times more space-economic than a car. On the other hand, the bus is 3.6 more economic than the bicycle.

DETERMINANTS

The time-area occupancy resulting from parking is influenced not only by the surface occupied by the vehicle but also,

Graph 2 : Total time-area occupancy for a 2 x 2 km trip and 2 hours parking



and essentially, by the purpose of the trip, i.e. its duration : parking at the workplace (8 hours) is not the same as short-term parking for shopping purposes. For example, for 8 hours parking and a 2 x 2 km trip by car, parking represents more than 8/10ths of the time-area occupancy.

The time-area occupancy is very sensitive to the values chosen to calculate it. It is important to be careful about the data. For example, is it better to use the average, or highest, occupancy rate, ranging from 1,25 to 5 for a car and from 10 to 60 for a bus ?

Over the past 25 years, traffic policies in city centres have aimed at reducing ground area occupancy of cars, by influencing the different variables :

- introduction of parking fees, to reduce the duration of parking (reduction of h_i),
- traffic regulation through technological improvements (computers...), allowing speeds, and therefore traffic flows, to increase,
- attempts to increase vehicle occupancy rates (car-pooling, car-sharing...),
- reduction of city centre accessibility for cars by reducing parking space (indirect reduction of h_i)

All these measures contribute to the reorganisation of city centres, in order to provide better for the needs of pedestrians, cyclists and public transport, all these modes being more efficient in terms of space occupancy.

CONCLUSION

This concept of time area occupancy is most valuable. It is possible to use it for every mode of transport and every kind of trip), as it is possible to make some comparisons between modes. It should be interesting to link these space occupancies to density of inhabitants and/or jobs for every urban area. The more people living in an area, the more space is needed for their trips. But the available space is limited. Therefore, the most space-economical modes of transport should be strongly promoted and developed.

CYCLE PATHS AND THEIR VALUE FOR WILDLIFE

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CYCLE PATHS AND THEIR VALUE FOR WILDLIFE

Cycle paths, especially those built on disused railway lines, can be very important for wildlife. They create new habitats or conserve existing ones, forming corridors through the countryside which are a vital element for a number of threatened species. They preserve bridges over and under roads allowing mammals, amphibians and reptiles to cross safely. They have a wide variety of aspects, slopes and soil types in a short distance making them very valuable as habitats. Converting them to cycle paths means that many more people are keen to protect them and gives them permanence. Habitat management becomes part of the general management of the cycle path which improves the quality of the path and the enjoyment of the ride for cyclists.

RADWEGE UND IHR WERT FÜR DIE TIERWELT

Radwege können, insbesondere wenn sie entlang aufgelassener Eisenbahnlinien eingerichtet werden, für die Tierwelt sehr wichtig sein. Sie schaffen neue Lebensräume oder bewahren bestehende, indem sie Korridore durch die Landschaft bilden, die für eine Anzahl bedrohter Arten ein lebenswichtiges Element darstellen. Sie sorgen für den Fortbestand von Überquerungsmöglichkeiten über und unter Straßen, die es Säugetieren, Amphibien und Reptilien erlauben, die Verkehrswege sicher zu überqueren. Sie zeichnen sich durch eine große Vielzahl unterschiedlicher Aspekte, Neigungen und Bodentypen auf kurzer Distanz aus, was sie als Lebensräume sehr wertvoll macht. Eine Umwandlung in Radwege bedeutet, daß wesentlich mehr Menschen sich um ihren Schutz bemühen und ihnen dauerhaften Bestand verleihen. Das Management des Lebensraums wird zu einem Teil des allgemeinen Managements des Radwegs, was die Qualität des Wegs und das Vergnügen des Radfahrers steigert.

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CYCLE PATHS AND THEIR VALUE FOR WILDLIFE

Sustrans (sustainable transport) is a national charity with 19 years of practical civil engineering experience in building traffic-free routes and is promoting the National Cycle Network. This is a project to develop a network of some 13,300 kms of high quality cycle routes around the United Kingdom. The aim of these routes is to create a cycling culture, to popularise cycling and to enable ordinary people to take to their bikes in the confidence that there is a safe route to school, to work, or for leisure, in order to encourage a modal shift in personal transport away from private cars. About half of the National Cycle Network is traffic free and has been designed for use by pedestrians, by cyclists, by wheelchair users and, often, by horse riders.

Almost a third of the total length will be on existing or new linear routes such as canal tow paths and disused railway lines. The latter are particularly important as very many rural railways were closed, mainly during the 1960s, and have fallen into dereliction since then so they represent a significant resource. On some, the vegetation has taken over and a valuable natural habitat is the result but many have simply become overgrown with trees and bramble scrub which have shaded out all the other plants and often left a very poor area of low wildlife value.

Almost all of the off-road routes are intrinsically valuable for wildlife. Most are based on engineering features, such as railways and canals, which have set out to remain on the level through a landscape which is generally undulating. Consequently they have a wide variety of slopes and aspects and, with that, a broad range of habitats - dry south facing slopes, cool north facing slopes, damp cuttings, level areas of rough grassland, hedges, copses, wet places where drains have failed, cuttings with the slopes at the perfect angle for orchids to thrive or reptiles to bask, embankments where badgers and rabbits can dig their holes - the diversity is enormous.

But, because the paths which Sustrans builds are rarely more than 3 metres wide, path building causes only minor changes to such habitats. To begin with the machinery used is generally of an agricultural scale - small diggers, dumper trucks and rollers - which will fit on the path width and cause minimal disturbance themselves. They are on site for very short periods of time and make little noise. Secondly most of the work, especially in critical areas, can be carried out within the width of the path itself so that valuable habitats outside of the path width will not be damaged. Thirdly work is carefully timed to avoid crucial events. Scrub cutting takes place between August and February in order to avoid nesting birds. Work near badger setts has to be done between 1 July and 30 November.

There have been one or two occasions when the species encountered have been so rare that Sustrans has agreed to find an alternative route rather than risk causing significant environmental damage. Such cases tend to be unusual, however, largely because the sorts of habitats found on disused railways and similar sites are transitional. They are still at the stage where wildlife is colonising them, grassland is being taken over by scrub, and trees are moving in. Often grassland areas were kept open by railway companies, who burned the embankments to stop the spread of large trees which would fall on trains. Many were particularly valuable for their wild flowers which are then lost as, without management of any sort, scrub has invaded and shaded them out.

One of the significant benefits of conversion to a cycle path is that these facilities are managed for the future. Minimal maintenance means keeping the path open by maintaining a grass strip at least 1 metre wide along each side of the path, partly to keep thorn bushes at least a metre away from the running surface so that, when they are trimmed, thorns do not fall on the path. But if nothing more than this is done, the path soon develops into a green tunnel which rapidly becomes very boring to cycle along. Sustrans is very proud of what it calls "travelling landscapes", which can be seen, enjoyed and appreciated from a moving bicycle and, in order to create the windows onto the views, the enclosed areas and the general variety, a much greater management input is required. There are three basic principles behind this management.

1. Cyclists travel faster than pedestrians so that habitat blocks need to be larger in order for them to be noticed. It takes a moving cyclist several hundred metres to tune into a new habitat type as he/she moves from say woodland to open grassland and to begin to take in the detail of small flowers among the grasses. Equally, gaps in vegetation to allow views from a path should be of significant size. There is little point in cutting a gap a few metres long in path-side bushes as this provides just a tantalising glimpse to a passing cyclist.
2. Big habitat blocks are easier to manage. A management plan for a path which demands small areas of work here and there will quickly be abandoned as being too difficult to put into practice. Big blocks mean that machinery can be used effectively and they also keep management plans simple so that these are more likely to be implemented.

3. They are also much better for most species than small blocks. The larger the area of suitable habitat (within a general agricultural landscape), the more likely most wildlife is to thrive. There is likely to be greater genetic diversity in larger areas and thus a bigger survival rate. Large areas of rough grassland, for instance, are needed for field voles. They will not colonise small areas as these will be occupied by wood mice from the surrounding trees or scrub. So with big habitat blocks, you get more variety, not only of the habitat itself and the general appearance of the path, but also of the wildlife too.

But habitats of this sort are not necessarily unique to cycle paths. Nature reserves and parks often have similar management regimes. The most significant feature about off-road cycle paths is the very fact that they are linear. There has been a lot of debate in recent years about the value, or otherwise, of wildlife corridors and their importance for wildlife movements. The general consensus currently appears to favour them and positive legislation encouraging the provision of corridors is now included in Article 10 of the 1992 EC Habitats and Species Directive as well as in English domestic policy under Planning Policy Guidance notes 9.

Wildlife corridors provide opportunities for a wide variety of species to move around within agricultural landscapes which are becoming increasingly intensive and which are either losing linear features which were previously beneficial (Britain has lost 40% of its hedges since 1945 and 13% between 1990 and 1993) or are being further fragmented by road construction. (For many species roads occupy a corridor much wider than the actual tarmac). Examples include the common or hazel dormouse which is becoming increasingly isolated in ever smaller woodlands. It is an arboreal species which rarely comes down to the ground and has been known to refuse to cross a gap one metre wide in a hedgerow. Bats, especially the smaller bats, use hedgerows to navigate across farmland. If a hedge is removed they are not able to make ultra-sonic calls loud enough to reach across fields and so they will fly around three sides rather than risk setting out across the unknown space where the fourth once was. Many studies have shown that hedgerows are vital for bats. By ensuring that wherever possible, hedgerows are maintained along cycle paths, these essential linear features are preserved.

At the same time such hedgerows and other linear features will almost certainly be more permanent than those on agricultural land. A little over a century ago, coppiced hazel woodland would have been considered an essential part of the countryside, providing necessary raw materials for many rural operations. Now coppiced woodland has all but disappeared from the British countryside. Hedgerows have gone too, as we have already seen, and much of the loss was actually funded by the government which paid grants to farmers to remove hedges so that they could use larger, more cost effective, machinery in their bigger fields. Now that situation has been reversed and farmers are encouraged by grants to plant hedges and fined if they remove them. Hedges alongside cycle paths will not be subject to the vagaries of agricultural policy and so will remain, in spite of any future changes. The importance of this permanence and, therefore, the lasting nature of the cycle path habitats in an ever changing countryside cannot be over stressed.

Wildlife reserves are often thought of as the poor relation among land uses. The lack of significant commercial value has meant that, in the past, road planners almost seem to have targeted areas of wildlife importance for their routes simply because such areas have been cheap to acquire and the body of people keen to see them survive intact has been small. However important for wildlife, areas such as disused railway lines will be considered derelict and of little value. But if these sites are converted for use as cycle paths, the constituency of people interested in their future will grow with every new user and so the likelihood that they will survive intact will increase, thus giving them a much greater likelihood of permanency.

Of great significance for wildlife is the fact that cycle paths preserve bridges either under or over roads, railway lines and rivers. These links, especially over roads, are very important. Without them many of the larger mammals, in particular, are killed by traffic. With them a wide variety of species can cross roads in safety. The significance of habitat links across roads can be illustrated by the fact the Dutch have built special bridges for amphibians and reptiles while the Canadians have constructed very expensive habitat bridges for larger mammals, especially bears, across highways in the Rockies. There are hundreds of examples of animals using bridges to cross roads safely. Yet, if the disused railway line was of interest solely for its wildlife rather for its transport function, such bridges would disappear because of the cost of maintenance and the need to remove obstructions from the highway.

Finally, if cycle paths can become such excellent linear habitats, will their use by members of the public disturb the very wildlife living on them? If the users were only cyclists, the answer would be very little. Cyclists are generally on some sort of journey, they do not stop as frequently or as readily as pedestrians, they do not bring dogs with them, they pass by quickly and silently and they cause almost no disturbance. The Royal Society for the Protection of Birds, Britain's foremost

CYCLING AND URBAN TRAVEL CHOICE

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ENGLISH

CYCLING AND URBAN TRAVEL CHOICE

There is growing interest at both national and local level in increasing the attractiveness of cycling as a mode of transport and hence enabling cycling to play a larger role in urban travel. This paper reports on the findings of a research project which aims to develop quantitative urban choice models which contain a detailed consideration of cycling in order to allow end user such as decision makers and planners to: (i) predict the behavioural consequences of a wide range of measures which could be used to make cycling more attractive; and (ii) evaluate the benefits of investment in cycling facilities and of other measures to improve cycling conditions.

DEUTSCH

RADFAHREN UND VERKEHRSMITTELWAHL IM STÄDTISCHEN BEREICH

Sowohl auf nationaler als auch auf lokaler Ebene steigt das Interesse, die Attraktivität des Fahrrads als Verkehrsmittel zu steigern und dem Fahrradverkehr damit die Möglichkeit einzuräumen, im städtischen Verkehr eine größere Rolle zu spielen. Dieses Referat berichtet über die Ergebnisse eines Forschungsprojekts, das quantitative Modelle für die Verkehrsmittelwahl im städtischen Bereich entwickeln möchte, die das Radfahren im Detail berücksichtigen, um es Endbenutzern wie beispielsweise Planungsexperten und Entscheidungsträgern zu ermöglichen, (i) die Auswirkungen einer Vielzahl möglicher Maßnahmen zur Förderung des Radfahrens auf das Verhalten der Menschen zu prognostizieren und (ii) den Nutzen von Investitionen in Radverkehrsanlagen und anderen Maßnahmen zur Verbesserung der Bedingungen für Radfahrer zu bewerten.

SLOVENSKO

KOLESARJENJE IN IZBIRA NAČINA POTOVANJA V MESTIH

Na nacionalni in lokalni ravni obstaja naraščajoče zanimanje za povečanje atraktivnosti kolesarjenja, kot načina potovanja. Želijo tudi, da bi kolesarjenje dobilo pomembnejše mesto pri potovanjih v urbanih naseljih. Prispevek poroča o ugotovitvah raziskovalnega projekta, katerega cilj je razvoj števila tistih modelov izbire v urbanih naseljih, ki vsebujejo natančno razmišljanje o kolesarjenju, z namenom omogočiti uporabnikom, ter tistim, ki sprejemajo odločitve in načrtovalcem: 1. napovedovanje vedenjskih posledic niza meril, ki bi jih lahko uporabili za zvišanje popularnosti kolesarjenja; 2. vrednotenje koristi investiranja v kolesarsko infrastrukturo in ostalih ukrepov za izboljšanje pogojev za kolesarjenje.

CYCLING AND URBAN TRAVEL CHOICE

1. INTRODUCTION

In contrast with the vast amount of research which has been conducted into understanding the demand for motorised modes of transport, relatively little attention has been paid to the slower modes of walking and cycling. In addition, what work there has been on possible demand for cycling has been qualitative in nature, indicating the general concerns of cyclists and non-cyclists, rather than any quantitative evaluation of the magnitude of different factors.

This research project is looking at the factors which might induce more people to cycle in the urban context, with the primary aim of estimating the potential for reducing car traffic. Models are being developed which will be used to explain people's choices between car, bus, cycle and walk for the commuting trip. These models are based on detailed surveys of people's actual mode choices and the facilities available to them, the surveys also included hypothetical

FRIDAY

questions posed about people's mode choice if various aspects of their journey were changed, in particular, if specific cycle facilities were made available.

As a result of increasing interest in cycling and investment to improve conditions for existing cyclists and encourage more people to cycle, there is likely to be increasing demands for rigorous evaluation of proposed schemes. It is anticipated that these models will be used to appraise different cycle facilities and proposed schemes, to predict the modal share consequences and evaluate the benefits of investment.

2. METHODOLOGY

In order to collect the data necessary for developing the model, over 1000 detailed computer based questionnaires were completed in four different locations across the UK. An initial screening survey ensured that only those respondents satisfying certain criteria were questioned in detail. The criteria were:

- The respondent travelled to work or college at least twice a week
- The journey from home to work/college was 7.5 miles (12 km) or less
- The respondent would be prepared to cycle to work/college if cycle facilities and provision were made sufficiently attractive

This meant that only those likely to cycle were questioned in detail about their trip making behaviour, but it is important to realise that the resulting models will only apply to a proportion of the population (this proportion is known, because the details of respondents failing the screening survey were recorded). This will result in a 2 level model, the first level applying to the whole population, giving the proportion of the population who would consider switching to cycle, the second level describing the behaviour of this section of the population in greater detail.

The actual questionnaire was broken into two main sections. The first asked questions about the respondents actual journey to work and was designed to elicit revealed preference (RP) data, so that the models can be grounded in actual mode choice behaviour. The second section posed a range of different sets of hypothetical questions about mode choice under changes in certain aspects of the respondent's journey which might influence them to change mode. The collection of this stated preference (SP) data allows a much larger number of mode choice decisions to be studied with the different factors that determine the respondent's choice controlled very precisely. Of course, the design of SP questionnaires has to be done carefully to ensure that the factors included are important to the respondent's choice and that the magnitude of the factors suggested is sufficient to influence that choice.

2.1 THE RP SURVEY

The respondent was asked about their current choice of mode for their journey to work and a number of feasible alternative modes. Since they had already said that they might cycle if conditions were improved (as part of the screening survey), they were always asked about cycling to work and they were always asked how long it would take them to walk to work.

The questions asked about the different modes were similar, whichever mode the respondent actually used to get to work. Though the questions posed about the alternative modes were obviously phrased slightly differently. The main questions concerned:

- For the car driver: travel time, time spent in congested conditions, walk time to work after parking the car, fuel costs, parking costs, other occupants of the car.
- For the car passenger: travel time, time spent in congested conditions, walking and waiting times associated with the lift to work, contribution to fuel and parking costs.
- For the bus user: walk time, wait time, travel time, time spent in congested conditions, walking time from the bus stop, whether a change of buses was required, ticket price.

The questions concerning cycling as the respondent's main mode or as an alternative were more detailed and covered:

Travel time, broken down according to time spent on different types of road or cycle provision, these were:

- Completely segregated cycleway with no motorised traffic on it, an example of this type of provision might be the routes developed by Sustrans on converted railway trackbeds.
- Segregated on road cycle lanes, that is provision which follows the line of the road but is segregated from it.
- Non segregated on road cycle lanes on major roads, these could be bus lanes or cycle lanes on the road segregated by a broken white line only.
- Major roads with no facilities for cyclists.
- Minor roads.

Time to walk to work after parking the bicycle.

Facilities available at work, such as secure cycle parking, changing rooms, lockers and shower facilities.

How the respondent rated various aspects of their actual or possible cycle journey, including hilliness, traffic danger, air

pollution and their own cycling ability. Non cyclists were also asked about the reasons they don't currently cycle to work. In addition, all respondents were asked about their occupation and household income.

2.2 THE SP SURVEY

Each respondent was presented with a single SP exercise, but the contents of these exercises were varied from respondent to respondent.

The issues covered in the various SP exercises offered to non cyclists were:

1. Time using current mode.
2. Cost using current mode.
3. Proportion of time on a segregated cycleway.
4. Proportion of time on a segregated on road cycle lane.
5. Proportion of time on a non segregated on road lane.
6. Proportion of the general population cycling.
7. Proportion of work colleagues cycling.
8. Trip end facilities offered to cyclists.
9. Payment offered for cycling to work.

Each different SP exercise covered a subset of these elements, but all the exercises included elements 1 and 2 (time and cost using current mode) as parts of the questions posed. The actual figures used for time and cost were derived from the answers the respondent had given in the RP part of the questionnaire. Respondents were given nine different scenarios, all similar in that they used the same elements from the above list, but with the magnitudes of the elements varied. They were asked to decide what they would do in each case, that is whether they would stick to their current mode, make the journey by cycle, use another mode or simply not make the journey.

As an example, one of the exercises asked about what the respondent would do if they were paid to cycle to work and there were changes to the trip end facilities offered at their place of work. Each of the 9 questions posed were of the form:

Time on current mode:	One of a range of 4 times based upon the journey time given in the RP questionnaire.
Cost by current mode:	One of a range of 4 costs based upon the cost calculated from the responses to the RP questionnaire.
Payment received:	A daily payment of either 50, 100, 150 or 200 pence.
Facilities at work:	Either 'no facilities', 'outdoor cycle parking', 'indoor cycle parking' or 'shower/changing facilities and indoor cycle parking'.

The issues covered in the various SP exercises offered to cyclists were:

1. Time on current route.
2. Time on a purpose built cycleway with similar environmental aspects as their current trip and which was described as of the 'flattest possible gradient'.
3. Time on a purpose built cycleway which offered an improved environment in terms of air pollution and noise.
4. Cost to use the cycleway.
5. Surface of the cycleway.

Cyclists had to make a choice between whether they would choose the new cycleway (cyclists were consistently offered one of the two types of cycleway) with a cost attached or their current route.

3. DISCUSSION

While the data collection phase of the project has now been completed, there has not yet been time for detailed modelling of the returned questionnaires. Results will be available at the time this paper is presented.

It is anticipated that these models will be applied to examples of actual or planned investments in cycling infrastructure or other facilities. The models will allow different values to be attached to different attributes of the facilities, due to the inclusion of costs in one form or another in most of the different SP scenarios used. This is in contrast to much of

the previous work which has involved more qualitative evaluation of the important aspects of cyclists' route and mode choice. The models will also estimate the number of non cyclists who will consider cycling as a result of the changed circumstances. These two elements will allow some form of economic appraisal to take place. The project team is currently looking for appropriate case studies upon which to base this phase of their work.

This work is building on previous work in this area which has applied SP techniques to both cycle route and mode choice to generate more limited quantitative models. Hopkinson and Wardman (1996) showed, with a study of cycle facility provision in Bradford, West Yorkshire, that different values were placed on different attributes of alternative cycle routes. They found that, for a commuter journey of about 5 km, a bus and cycle lane on a busy road was valued at 7 pence, a widened lane on a less busy alternative was valued at 18 pence, a segregated path alongside the less busy route was valued at 30 pence and a completely segregated cycleway was valued at 71 pence.

Wardman et al (1997), managed to derive estimates of values of time for cycling in different weather conditions and using different facilities. It was found that the value of time for cycling varied from 2.87 p/min for a trip in fine weather on a segregated cycling facility to 21.28 p/min for cycling in rainy and windy weather where there were no facilities. Based upon fine weather conditions a fully segregated and continuous cycle path was estimated to reduce the value of cycle time by 6.7 p/min, which implied that such a facility would be worth about 201 pence for a cycle journey of 30 minutes, or the same as a 21 minute journey time reduction. In the same study the value of car/bus time was estimated to be 1.54 p/min. The value of some cycle facilities were also valued as part of this study and it was found that a considerable premium of 66 pence was attached to the provision of secure cycle parking.

The results of the survey work described in this paper will lead to more detailed and robust estimates for these values and allow the development of detailed methods of economic appraisal of cycle schemes and facilities.

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BEHAVIOURAL FACTORS AFFECTING THE INTENTION TO CYCLE

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ENGLISH

BEHAVIOURAL FACTORS AFFECTING THE INTENTION TO CYCLE

In this study 354 participants from Amsterdam Barcelona and Copenhagen took part. Each person filled in a survey looking at short journeys by foot, bike and car and a one-day travel diary. The survey was based on an extended version of the Theory of Planned Behaviour.

Results showed that the extended version of the theory is a satisfactory tool in the assessment of travel behaviour and that perceived behavioural control and habit are important factors in the prediction of modal choice.

These results also showed that participants from Barcelona, which had low rates of cycling, tended to have more negative attitudes towards cycling than participants from Amsterdam and Copenhagen (i.e. cities with high rates of cycling). It also confirmed that there was a perceptual difference between user and non users of travel alternatives.

VERHALTENSAKTOREN, DIE SICH AUF DIE VERKEHRSMITTELWAHL AUSWIRKEN

An dieser Studie nahmen 354 Teilnehmer aus Amsterdam, Barcelona und Kopenhagen teil. Jeder Teilnehmer füllte einen Fragebogen, in dem Angaben zur Zurücklegung kurzer Strecken zu Fuß, per Fahrrad und PKW gemacht wurden, sowie einen eintägigen Überblick über sein Bewegungsverhalten aus. Der Fragebogen basierte auf einer erweiterten Version der Theory of Planned Behaviour.

Die Ergebnisse zeigten, daß für die Prognostizierung der Verkehrsmittelwahl Verhaltenssteuerung und Gewohnheit sehr wichtige Faktoren waren. Die Studie legte den Schluß nahe, daß regelmäßige Praxis die Kompetenz der betroffenen Person steigert, was seinerseits ihre eigene Verhaltenssteuerung steigert.

Diese Ergebnisse zeigten auch, daß die Teilnehmer aus Barcelona, wo nur sehr wenig mit dem Rad gefahren wird, eher eine negative Einstellung zum Radfahren hatten als die Teilnehmer aus Amsterdam und Kopenhagen (d.h. aus Städten, in denen viel mit dem Rad gefahren wird). Es bestätigte sich auch, daß es Auffassungsunterschiede zwischen den Benutzern und Nichtbenutzern von alternativen Fortbewegungsmitteln gab.

VEDENJSKI FAKTORJI, KI VPLIVAJO NA NAJBOLJ POGOSTO IZBIRO

V raziskavi je sodelovalo 354 udeležencev iz Amsterdama, Barcelone in Copenhagna. Vsak udeleženec je izpolnil anketo, kjer je bilo na izbiro kratko potovanje peš, s kolesom ali z avtomobilom in dnevnik enodnevnega potovanja. Anketa je bila osnovana na razširjeni verziji Teorije načrtovanega vedenja.

Rezultati so pokazali, da sta zaznaven nadzor vedenja in navada zelo pomembna činitelja pri napovedovanju najbolj pogoste izbire. To kaže, da redna vaja dela ljudi sposobnejše, kar v zameno povečuje njihovo lastno dojetje nadzora vedenja.

Rezultati so tudi pokazali, da so udeleženci iz Barcelone, kjer je delež kolesarjenja nižji, imeli bolj negativen odnos do kolesarjenja, kot udeleženci iz Amsterdama in Copenhagna (mesti z visokim deležem kolesarjenja). Potrjena je bila razlika v dojemljivosti med uporabniki in ne-uporabniki potovalnih alternativ.

BEHAVIOURAL FACTORS AFFECTING THE INTENTION TO CYCLE

INTRODUCTION

The total number of cycle trips varies a great deal from city to city with less than 1% in Barcelona (EMO, 1991) to 26% in Copenhagen (National Travel Survey Database, 1995) and 28% in Amsterdam (Ministry of Transport, 1995). Low levels of cycling reflect the fact that for many cycling has ceased to be seen as a serious mode of transport and for some cycling is only viewed as a plaything for children (Adams, 1993) or for recreational purposes. However, this is not always the case and in countries like Denmark and the Netherlands this pattern has changed. For instance, bicycle usage in the Netherlands, which used to be declining, is now on the increase and between 1981-87 the growth rate was 29% which far exceeded any other mode of transport (Simon 1987).

The bicycle is mainly used for journeys between home and work: 45% in France and the UK (Webster, Bly, Johnston, Paulley, and Dasgupta, 1985), 39% in Denmark and 33% in the Netherlands (Hansen, 1995). The second most important in Denmark is shopping (30%) and in the Netherlands it is leisure (26%) (Hansen, 1995). Men tend to cycle more than women (Wigan, 1995; Ashley, 1989) although this trend is reversed in cities with high level of cycling (Ashley and Banister, 1989). An acceptable distance to cycle is around 5 km (Lei, Jensen, Nilsson and Herrstedt, 1995; Stihl, 1996) although most journeys are under 5km (Jensen, 1994; Centraal Bureau voor de Statistiek, 1997). Committed "cyclists" would cycle even if it rains and would use the bike even in the winter (Municipality of Copenhagen, 1996).

The benefits of cycling are that it is seen as convenient (Finch and Morgan, 1985; Taylor, 1996), cheap (Finch et al., 1985; Lei et al., 1995; Taylor, 1996), quick (Lei et al., 1995), enjoyable (Trevelyan et al., 1978; Finch et al., 1985), promoting health (Trevelyan et al., 1978; Finch et al., 1985; Lei et al., 1995; Heiden et al., 1994; Taylor, 1996) and environmentally friendly (Finch et al., 1985; Heiden et al., 1994; Lei et al., 1995).

The disadvantages are that it can be dangerous (Trevelyan et al., 1978; Finch et al., 1985; Hillman, 1993; Hansen, 1995),

and that it can be stolen (Finch et al., 1985; Hansen, 1995). It is also regarded as inconvenient (Finch et al., 1985) especially if you have to carry luggage (Heiden et al., 1994). Some would argue that it is too much effort (Finch et al., 1985) and not comfortable (Heiden et al., 1994) others, that it is more for recreation rather than a mode of transport (Hansen, 1995). The attitudes towards biking varies across different countries and countries with low bicycle rates tend to have more negative attitudes than countries with high bicycle rates (Hansen, 1995). In Great Britain, for instance, many people regard cycling as a dangerous form of travel.

In this presentation I will present some results from an European project called ADONIS. The background to this project is the fact that we are witnessing a growing interest in non-motorised modes of transport, due in large part to concerns over the negative side effects of car usage. The increased levels of traffic have already resulted in many European cities suffering from serious problems in the areas of: safety, congestion and pollution. The aim of this project was therefore to suggest means by which the short car journey can be reduced thus ameliorating this rapidly deteriorating situation, possibly with walking and cycling. This presentation will focus on the latter.

METHOD

Participants: 354 people of both sexes, 183 males and 171 females, took part in this study (135 from Amsterdam; 100 from Barcelona and 119 from Copenhagen). The average age was 38 years, with an age range of 18 to 68 years.

PROCEDURE

Pilot study

Ten participants from each city, were invited to take part in a group discussion, about short journeys of approximately 3 km to work or study, starting from their own home. They were asked to describe how that journey would be, depending on which form of transport they choose: car, bicycle or walking, whether they could think about anything which would facilitate or inhibit them from using one mode or the other and the reaction of people close to them. The aim of the pilot study was to identify behavioural beliefs, control beliefs and referents with respect to the different modes of transport.

The final selection of salient beliefs were based on frequency, that is if more than one country had made the statement. Additional weight was given to a belief, which in previous studies has been found to be important.

Main study

Two different surveys were carried out, one travel survey covering one day of travel and one as an attitude study. The travel diary was used to provide data on journeys carried out the day before the interview. It included information on different aspects of travel such as number of trips taken, trip purpose and reason, length and time of day. The attitude study was based on an extended version of the Theory of Planned Behaviour (TPB) (see Ajzen 1985) covering attitudes, social norms, perceived control and habit. Salient background information was collected, including: gender, age, occupation, working hours per week, income, education, main user of private car and means of transport at their disposal.

Each city drew telephone numbers randomly from a telephone directory covering the survey area. Citizens in Amsterdam, Barcelona and Copenhagen were then contacted by phone and asked if they travel up to 5 km on a regular basis and if they possessed a current driving licence. If the answer was affirmative the nature of the study was explained. It was important that they agreed to participate in both studies, i.e. travel diary and attitude study.

The interviewer went through the travel diary and a trip was recorded if it exceeded 300 m. Three days later the same people received a mailed questionnaire. In this survey the participants were first asked to imagine a journey of 2.5 km and then rate on a 7 point scale their attitudes, perceived behavioural control and subjective norms towards walking, biking and driving.

Following this the participants who failed to return the questionnaire were contacted by phone.

RESULTS

Socio-economic and demographic background

Firstly the participants socio-economic and demographic characteristics were determined using a chi-square test. Significant differences were found with regard to occupation ($p < .05$); working hours ($p < .01$); income ($p < .01$); education ($p < .01$); and main user of car ($p < .01$). There were fewer professionals and more people who worked part-time in Barcelona as compared with Amsterdam and Copenhagen. Amsterdam had proportionally more people with University education and more people with the highest income. 73% of the people in Copenhagen were not the main user of a car which was significantly more than both Amsterdam (55%) and Barcelona (39%). The representation of gender and age groups were similar in the different cities.

TRAVEL SURVEY

Modal split and number of trips

The proportion of people going by foot ranged from 9% in Copenhagen to 18% in Amsterdam and 31% in Barcelona. The proportion of cyclist was highest in Copenhagen (51%) followed by Amsterdam (34%), nobody used the cycle in Barcelona. The proportion of journeys by car were fairly similar, Amsterdam 32%, Barcelona 30% and Copenhagen 27%. Modal split was not dependent on gender and the income.

On average Amsterdam and Barcelona took more trips by foot (2.5 and 2.7) as compared with Copenhagen (1.7). The number of trips by bike was greater in Amsterdam (3.5) than Copenhagen (2.2). People in Amsterdam carried out more journeys by car than any other city (3.8) and Copenhagen the least (2.5).

The purpose of using the bike

The following section will only deal with participants who used the bike for the whole trip and since nobody in Barcelona did so only results from Amsterdam and Copenhagen will be presented.

The purpose of the trip was divided into work/school (2,3,4), personal business (5,6,9) and leisure activities (7,8).

The main purpose for using the bike in Amsterdam was for personal business and in Copenhagen work and personal business were equally important. In both cities the least likely purpose for using the bike was for leisure journeys.

ATTITUDE STUDY

According to the Theory of Planned Behaviour the personal intention to perform a behaviour is based on attitudes toward the act, subjective norms and perceived behavioural control

The intention to bike a distance of 2.5 kilometres correlated significantly with the attitudes, subjective norm, perceived behavioural control and habit. Habit correlated more strongly, or as strongly, with intention than the other variables. Perceived behavioural control. was the variable which appeared to most resemble habit.

Individual items within the Theory of Planned Behaviour and the prediction of intention

People can hold a great many beliefs about any given object, but they can attend to only a relatively small number, at any given moment. These specific, or salient beliefs, are of great interest since they provide a more detailed insight into the roots of the behaviour under investigation. Three kinds of salient beliefs are distinguished by the Theory of Planned Behaviour: (1) behavioural beliefs, which are assumed to influence attitudes toward the behaviour, (2) normative beliefs, which constitute the underlying determinants of subjective norms, and (3) control beliefs, which influence perceived behavioural control. Hence in order to more fully capture the motives behind cycling we wanted to know which one of these specific beliefs was associated with intention. Separate analysis were therefore made using Pearsons r correlation matrix.

The multiple regression analysis showed that perceived behavioural control, subjective norm and attitudes together accounted for 57% of the variance explaining the intention to bike .

It can be seen that control beliefs were strongly associated with intention to bike. Respondents were more likely to bike if the weather was dry, the traffic was heavy, if it was during the night and if they were in a hurry. They were somewhat less likely to bike if they had a lot to carry. They also believed that people close to them would approve of themselves biking, although friends slightly more than family and partners. Most of the behavioural beliefs included in this questionnaire were also highly related to intention to bike. The positive beliefs correlated positively and the negative one's negatively. Respondents believed that biking increased their freedom, made them to feel relaxed and that it was a fairly comfortable mode of travel. They did not believe that it was expensive nor that it would be time consuming or that they could be threatened by other people. However, it was also believed that it could increase their chances of being involved in an accident and they were fairly worried about the bike being stolen.

Variables within the Theory of Planned Behaviour and the effect of Cities

One of the purposes of this research was to assess cross-cultural differences so the next step was to determine if we could find some variations between the different cities. A general factorial analysis of variance (ANOVA) was used to determine if the responses to the variables within the TPB differed between the cities. Our first analysis assessed the combined measures and our second analysis looked at individual items. The ANOVA tells us whether it is a significant difference

between the scores but not where this difference lies. Supplementary analysis was therefore carried out using Tukey's post hoc test.

Control Beliefs

Respondents from both Amsterdam and Copenhagen did not feel that any of the items measuring control beliefs could prevent them from using the bike except for having a lot to carry. On the other hand, the respondents from Barcelona argued that the same factors would make cycling less likely. Indeed the scores from Barcelona were significantly lower than the other two groups with regard to being in a hurry, traffic and weather. With regard to cycling at night time respondents from Amsterdam were the least worried. Having a lot to carry did not prevent people from Copenhagen biking when compared to the other two cities.

BEHAVIOURAL BELIEFS

Respondents from Barcelona tended to be very negative about cycling. Their scores were significantly lower, than the scores from Amsterdam and Copenhagen, with regard to comfort, relaxation, freedom, time and threats. All the groups differed with regard to theft, with respondents from Copenhagen being the least worried about this aspect. Finally, respondents from Copenhagen were the least likely to believe that cycling would increase their cost. All the respondents were concerned about accidents although the scores were slightly higher in Barcelona.

Normative beliefs

The mean values from the different cities with regard to cycling shows that respondents from Barcelona were less likely to believe that their friends, partners and family would approve of themselves biking than respondents from Amsterdam and Copenhagen.

Individual items within the Theory of Planned Behaviour and the effect of cities and intention

The next step was to determine if the measures which correlated with intention differed within the groups. Further analysis were therefore made using the Mann-Whitney U test to compare intenders' versus non-intenders' beliefs within each city. A non-parametric test was chosen since the groups were relatively small and not normally distributed. In this analysis the two groups were separated on the basis of intentions expressed. In these analysis only items which on previous occasion have been found to correlate with intention were assessed.

Control beliefs

All the measures in Amsterdam and Copenhagen differentiated intenders from non-intenders. People who intended to bike were more likely than the non-intenders to bike if they were in a real hurry, the traffic was heavy, the weather was dry and if it was night time. Having a lot to carry could, by the intenders, be seen as a disincentive to bike although not to the same degree as for the non-intenders. In Barcelona two measures differed significantly namely heavy traffic and dry weather with the intenders being more likely to bike under these conditions.

Behavioural Beliefs

The intenders and non-intenders in Amsterdam differed significantly on many of the measures. Respondent who intended to bike believed more strongly than people who did not intend to that it would be comfortable, relaxing and that it increased their sense of freedom. The non-intenders were generally more negative about cycling and believed to a greater extent than the intenders that it would increase their chances of being threaten and they would also worry more about the bike being stolen. In Barcelona intenders and non-intenders held similar views with the only difference that non-intenders, more than the intenders, believed that biking would increase their travel time. The intenders in Copenhagen, like in Amsterdam, believed to a greater extent than the non-intenders that biking would increase their comfort although not to the same degree as in Amsterdam ($A=5.60$; $C=4.88$).

A significant difference was also found between the two groups from Copenhagen with regards to time. The non-intenders believed to a greater extent than the intenders that biking would increase their travel time.

DISCUSSION

The principal aim of this study was to collect information about the traveller him/herself including: socio-economic, demographic but also their needs and attitudes. This was done with the aim of developing strategies to reduce the number of short car trips and increase non-motorised modes of travel.

The socio-economic characteristics varied somewhat between the different cities. In Barcelona it was fewer professionals and more part-timers as compared with the other cities. In Amsterdam the level of education and income were higher than the other two cities but also higher than the national average (see Het Amsterdamse Bureau voor Onderzoek en Statistiek, 1996). In Copenhagen fewer of the participants had access to a car. No differences were found with regard to age or gender.

Travel survey

The travel pattern and attitudes of 354 people from Amsterdam, Barcelona and Copenhagen were then examined. From the travel survey it was found that the proportion of journeys by foot, bike and car undertaken by this group was closely related to previous research. In Barcelona the proportion of trips by foot, bike and car were fairly similar to the information collected in 1991 (EMO, 1991). The same applied to the data from Amsterdam collected in 1995 by the Ministry of Transport. In Copenhagen the number of trips by foot and car were slightly lower and the number of trips by bike were substantially greater in our study as compared to previous research (see National Travel Survey Database, 1995).

Hence, walking was most popular in Barcelona, followed by Amsterdam and least popular in Copenhagen. Cycling was most frequently used by the participants from Copenhagen followed by Amsterdam. Journeys by car were fairly evenly represented across the cities.

The purpose of the journey was divided into work/school, personal business and leisure activities. Since nobody in Barcelona had used the bike on the day when the survey was carried out only the results from Amsterdam and Copenhagen were presented. In Amsterdam journeys by bike were mainly done for personal business reasons and in Copenhagen the purpose was divided equally between personal business and work. The least likely reason for using the bike in both cities was for leisure journeys.

Attitude Study

The various items included in the variable perceived behavioural control correlated highly with intention to bike which would be expected since it was very successful in predicting intention to bike. Respondents would be more likely to use the bike if the traffic was heavy, the weather dry and if they were in a great hurry. One major factors which may discourage them from cycling was having a lot to carry which was in agreement with Heiden et al., (1994) study. Significant correlations were also found between eight of the eleven items including: comfort, relaxation, freedom, time, money, accidents, threat and bicycle theft. Participants believed that it would increase their freedom, and be both relaxing and comfortable. They did not believe that it was expensive or that it would increase their travel time. However, they were most concerned about the bike being stolen and/or being involved in an accident. In addition to the above, respondents also believed that others would approve of themselves cycling. Indeed previous studies have shown that the benefits of cycling is that it is cheap (Finch et al., 1985; Lei et al., 1995; Taylor, 1996) but also that it can be dangerous (Trevelyan et al., 1978; Finch et al., 1985; Hillman, 1993; Hansen, 1995), and that people are concerned about bicycle theft (Finch et al., 1985; Hansen 1995). However, this study also showed that biking could be comfortable which is in contrast to Heiden et al. (1994) who argued that people would not perceive biking as particularly comfortable

Further assessments were done to determine the effect of cities. The results showed differences between Barcelona on the one hand and Amsterdam and Copenhagen on the other. The results corroborated our hypothesis and it was found that the beliefs in Barcelona were significantly different from the other two cities. They scored lower on their control beliefs which indicated that these factors would prevent them from biking whereas in Amsterdam and Copenhagen the only thing which could stop them was if they had a lot to carry. In addition to this, people in Barcelona would feel unsafe cycling and would not believe that others would approve of themselves doing the same. Hence, they were less likely to bike if the traffic was heavy, something which did not worry people in Amsterdam and Copenhagen, they would feel more vulnerable to the threats from others which could mean that they would feel more harassed by the traffic something which also was supported by their scores measuring accidents which were fairly high. However, participants from Amsterdam and Copenhagen were also concerned about accidents but that could reasonably be balanced against all the aspects which were seen to be positive. Cycling was for instance regarded as a fast mode of travel which made them to feel both free and relaxed. Nevertheless, the scores from Amsterdam and Copenhagen were not identical. In general, people from Amsterdam were more positive than the people from Copenhagen with only one exception, they did worry more about bicycle thefts.

In order to determine the motive behind cycling we also needed to say something about the difference between people

who intended to use the bike with those that did not in the different cities. People who intended to bike in Amsterdam would argue more strongly that it increased their comfort, made them to feel relaxed and free. They were also more likely to bike if they were in a hurry, the traffic was heavy, the weather was dry and if it was night time than the non-intenders. The non-intenders would not disagree with the intenders that biking could increase their sense of freedom although this belief was not as strong. Furthermore, non-intenders would worry more about the bike being stolen and being threaten by other people. They would also be less likely to bike if they had a lot to carry. Both intenders and non-intenders experienced the same strong pressure from others to cycle.

The beliefs which differentiated the intenders from the non-intenders in Barcelona was that the latter were more likely to believe that it would increase their travel time. In addition to this, the same variables, namely heavy traffic and dry weather, would either discourage or encourage cycling depending on what they themselves intended to do. Hence the intenders would be encouraged whereas the non-intenders would be discouraged. The intenders and the non-intenders perceived little pressure from others to bike.

People who intended to bike in Copenhagen would argue more strongly that it was comfortable and would disagree with the statement that it increased travel time. Factors which would encourage the use of the bike were exactly the same as in Amsterdam, namely: being in a hurry, heavy traffic, dry weather and night time. The non-intenders would be less likely to bike if they had a lot to carry. Both the intenders and the non-intenders believed that others would approve of themselves biking.

It can thus be concluded that the intenders and non-intenders differed greatly from each other in Amsterdam and Copenhagen whereas in Barcelona they had greater similarity. In fact, the non-intenders control beliefs in Amsterdam and Copenhagen were more similar to the non-intenders in Barcelona than to the intenders in their own cities. This may suggest that there still remains a hard core of people (even if it might be declining) who have many barriers to overcome before they would start using the bike.

CONCLUSION

A great discrepancy was found with regard to cycling. Participants from Barcelona, with little or no experience, of cycling were very negative about this mode. The most important factor which prevented them from cycling was fear of accidents. In contrast, participants from Amsterdam and Copenhagen were very positive and the committed cyclists would use it in most circumstances. In Barcelona the attitudes were negative hence a different approach would be needed than in Amsterdam and Copenhagen. People in Barcelona were concerned about safety, which is of no surprise since the city lack adequate provision for cyclists. It would therefore be important, as a first step to:

- Develop a road infrastructure which gives higher priority to cyclists.

In cities with low rates of cycling, cycling is not seen as a mode of transport but rather one for recreational purposes. The image of the bike must therefore change and educational campaigns are needed.

- Promote cycling as a convenient, efficient and environmentally friendly mode of transport.

{In this study we found that habit and perceived behavioural control were important factors in the prediction of intention but also that they were related to each other. It could therefore be argued that regular practice makes the person more competent which in turn increases their own perceived behavioural control. In addition to the above, experience of using the bike appeared to affect their perception of time. People who were habitual cyclists' did not believe that cycling would increase travel time whereas the less committed one's did. This was further supported by a finding which revealed that the non-intenders were less likely to take the bike if they were in a hurry than the intenders. Indeed this study showed that the "cyclists" were very committed to cycling and would use it in most circumstances. It could therefore be argued that their different perceptions reflect their different experiences of using the bicycle. In general people who had no real experience of using the bike also resisted the use of the same. A resistance which would probably remain despite better provision for cyclists.

The most obvious solution to this would be to encourage the use of the bike before the person has decided to change their habits.

One approach to encourage people to use the bicycle to work was tried out in Aalborg, Denmark. In their campaign they introduced a new bicycle route, implemented a range of company based initiatives including the introduction of company bicycles for both work and home as well as on-duty short trips (Aalborg Municipality, 1997).

- Provide bicycles at places of work.

Other approaches which have been adopted in Copenhagen is to borrow a bike. These bikes, which are very easy to distinguish, are placed at different places around the city and can be borrowed free of charge and then returned at any other locking station.

- Provide city bicycles free of charge.

Another factor which discouraged the use of the bike was if they had a lot to carry. This applied to people who did not intend to bike but also to the group who in this study were labelled "cyclists". In fact it was the only factors which could discourage them from using the bike. Different schemes can therefore be introduced which makes renting of cars easier. In the Netherlands different schemes have been introduced to enable people the use of a car without owing one. It is called 'call-a-car' where a car can be reserved by phone and in some cases even be delivered to the door within an hour (see Kraay, 1996).

- Introduce "call-a-car" schemes.

However, in some cases an improved home delivery service would be sufficient.

- Improve home delivery services.

The last two recommendations may also prevent people from buying their own car. Several studies have found that buying a car has an important effect on modal choice. Many times the car becomes the first alternative, or even the only alternative. This was also substantiated by this study which showed that choosing the car on the first journey determined travel modes for the rest of the day, regardless of the distance travelled.

Finally, people in Amsterdam and Barcelona were worried about bicycle thefts. Various schemes have been adopted to prevent bicycle theft which in turn may increase bicycle use. Special racks or storage's can be provided but also various forms of registration programs which can help to trace the owner of a stolen bike.

- Introduce new types of cycle racks and storage systems.

- Introduce bicycle registration programs.

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DRIVING OR CYCLING TO WORK: MODELLING COMMUTERS MODE CHOICE BEHAVIOUR

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Insight into the effects of planning measures on the competition between cars and bicycles in home to work trips is still limited. To extend the insight into these effects, this paper discusses the choice between car and bike in the journey to work. The study concentrates on the importance of facilities for cars and bicycles at work trip destinations. About 300 employees completed a questionnaire that included a stated choice experiment about their trip to work.

Two multinomial logit models, derived from the stated choice experiment, were estimated and validated. The specified models contain attributes that cover facilities at the work place, relevant regulations, and travel characteristics. The estimation results suggest that especially for short work trips, facilities at the work place such as guarded bike stands with showers, and search time for a free parking space, influence the choice for a specific mode. Less important are travel time, walking time from parking facility to work place, and the presence of guarded parking facilities.

MIT DEM AUTO ODER MIT DEM FAHRRAD ZUR ARBEIT: MODELLIERUNG DES VERHALTENS VON PENDLERN IN BEZUG AUF DIE VERKEHRSMITTELWAHL

Die Einsicht in die Auswirkungen von Planungsmaßnahmen auf den Wettbewerb zwischen Auto und Fahrrad als Verkehrsmittel für den Weg zur Arbeit ist immer noch beschränkt. Um verstärkt Einblick in diese Auswirkungen zu geben, beschäftigt sich dieses Referat mit der Wahl zwischen dem Auto und dem Fahrrad für den Weg zur Arbeit. Die Studie konzentriert sich auf die Wichtigkeit von Einrichtungen für Autos und Fahrräder am Bestimmungsort. Etwa 300 Arbeitnehmer füllten einen Fragebogen aus, der unter anderem ein Stated-Choice-Experiment bezüglich ihres Wegs zur Arbeit umfaßte.

Zwei aus dem Stated-Choice-Experiment abgeleitete multinomiale Logit-Modelle, wurden erstellt und validiert. Die

DEUTSCH
spezifizierten Modelle enthalten Attribute, die Einrichtungen am Arbeitsplatz, relevante Bestimmungen und Fahrtcharakteristika abdecken. Die Ergebnisse der Schätzung legen nahe, daß insbesondere bei einem kurzen Weg zur Arbeit die Wahl eines bestimmten Fortbewegungsmittels durch am Ort des Arbeitsplatzes vorhandene Einrichtungen wie beispielsweise bewachte Fahrradabstellanlagen mit Duschen und die Dauer der Parkplatzsuche beeinflusst wird. Weniger wichtig hingegen sind die Fahrtzeit, die Gehzeit vom Parkplatz zum Arbeitsplatz und das Vorhandensein bewachter Parkmöglichkeiten.

SLOVENSKO NA DELO Z AVTOMOBILOM ALI S KOLESOM: MODELIRANJE IZBIRE NAČINA PREVOZA VOZAČEV

Vpogled v učinke načrtovanega deleža konkurence med avtomobili in kolesi v prevozih na delo in domov je še vedno omejen. Za boljši vpogled v te učinke, se prispevek ukvarja z izbiro med avtomobilom in kolesom za prevoz na delo. Raziskava se osredotoča na pomembnost prometnih povezav za avtomobile in kolesa na poti do dela. Okoli 300 zaposlenih je izpolnilo vprašalnik, ki je vključeval različne možnosti izbire prihoda na delo.

Ocenjena in preverjena sta bila dva multinominalna modela (logit), dobljena iz vprašalnika. Specificirani vzorci vsebujejo lastnosti, kot so parkirne možnosti na delovnem mestu, ustrezne odredbe in potovalno karakteristiko. Ocenjeni rezultati kažejo, da posebej če so razdalje prevoza na delo kratke, na odločitev za izbiro prevoznega sredstva vplivajo faktorji, kot npr. varovani prostori za postavitve koles s tuši in čas iskanja prostega parkirnega prostora. Manj pomembni so: čas prevoza, čas hoje od parkirišča do delovnega mesta in prisotnost varovanih parkirnih prostorov.

DRIVING OR CYCLING TO WORK: MODELLING COMMUTERS MODE CHOICE BEHAVIOUR

1. INTRODUCTION

At the moment there is a renewed interest in cycling as a way of commuter transport (for example, Cleary and McClintock, 1998; Nilsson and La Cour Lund, 1998; Lawson and Morris, 1998). These studies suggest that there is a substantial number of car drivers who are willing to switch mode if conditions like road safety, storage facilities, and compensation for bike use, would improve. This is remarkable given that over the years various policies aiming to increase bicycle use have been developed and many plans have been implemented.

Insight into the effects of suggested planning measures on the competition between cars and bicycles in work trips is however still limited. Most previous studies concerning mode choice of commuters concentrated on the choice between car and public transport; and between car, public transport and walking. The studies that pay attention to cycling focus mainly on the physical infrastructure such as bike lanes, pavement, and traffic lights. Little attention has been paid to bicycle storage facilities at workplaces.

To gain more insight into the effects of planning measures, this paper therefore concentrates on the facilities for cars and bicycles at work trip destinations. We developed a stated choice model to describe the choice between car and bike in the journey to work. The model includes attributes that specifically describe facilities at destinations, such as bike stands. The model is estimated on a sample of employees from two organisations and validated on the respondents' revealed mode choices. The model analysis is used to assess the importance of the various attributes.

The paper is organised as follows. After this short introduction, we specify multinomial logit models that can be estimated from choices observed in a stated choice experiment (section 2). We specify a model for respondents working at a short distance from home and another for respondents working at a longer distance from home. The models contain attributes that describe facilities at the work place, some relevant regulations, and some travel characteristics. The results of the model estimation are discussed in section 3. Next, the model is validated on revealed choice data, as described in section 4. The paper ends with some concluding remarks.

2. SPECIFYING STATED CHOICE MODELS

To get insight into the attributes that influence the choice between the car and the bicycle, and to estimate the importance of each attribute two choice models are specified. The models are based on stated choice data that makes it possible to control the interdependence between relevant attributes and to specify non-existent alternatives (Kroes & Sheldon, 1988). The universal logit model is used to analyse the choice data (see e.g., Oppewal and Timmermans, 1991). The (logarithm of the) relative probability that a certain mode (car, bike or other) will be chosen is modelled as an additive function of 12 selected attributes (Tables 1 and 2).

Table 1: *Attributes and attribute levels for the CAR alternative*

Attributes	levels 5 km	levels 10 km
1. Travel time between home and work	10 minutes	20 minutes
	15 minutes	30 minutes
	20 minutes	40 minutes
2. Search time for a free parking space	none	none
	5 minutes	5 minutes
	10 minutes	10 minutes
3. Walk time from parking lot to final destination	2.5 minutes	2.5 minutes
	5.0 minutes	5.0 minutes
	7.5 minutes	7.5 minutes
4. Guarded parking lot	yes	yes
	no	no
5. Allowance for travel costs	yes	yes
	no	no
6. Parking costs	none	none
	yes	yes

The selected attributes have to do with both facilities at the work destination, relevant regulations, and the total time needed for the home to work trip. To study the choice behaviour for a short and a long distance trip separately, two different models are specified. The first model deals with a home to work trip of 5 kilometre which is translated into a travel time with levels 10, 15 and 20 minutes for the car alternative, and 15, 20 and 25 minutes for the bicycle alternative. These differences in travel time originate from different routing and congestion conditions. The second model describes the mode choice behaviour in case of a 10-kilometre home to work trip. For that purpose, the various levels of the travel time are 20, 30 and 40 minutes for the car, and 30, 40 and 50 minutes for the bicycle.

Table 2: *Attributes and attribute levels for the BIKE alternative*

Attributes	levels 5 km	levels 10 km
1. Travel time between home and work	15 minutes	30 minutes
	20 minutes	40 minutes
	25 minutes	50 minutes
2. Walk time from bike stand to final destination	1 minute	1 minute
	3 minutes	3 minutes
	5 minutes	5 minutes
3. Guarded bike stand	yes	yes
	no	no
4. Quality of bike stand	excellent	excellent
	average	average
	poor	poor
5. Allowance for travel costs	yes	yes
	no	no
6. Storage costs	none	none
	yes	yes

When a parking lot or a bike stand is guarded it means that control by security guards or video is available. The quality of bike stands is defined at three levels: excellent, average, and poor. An excellent quality indicates a bike stand with roof and good shower and changing facilities. The bike stand is easy to access. An average quality corresponds to a bike stand with a roof and no facilities for showering or changing clothes. The accessibility of the bike stand is reasonable. If the bike stand is not covered and there are no additional facilities, the quality is poor.

The 12 selected attributes with accompanying levels result in 36 26 (=46656) different descriptions of possible mode choice situations. To conduct this experiment, a orthogonal fraction of 36 hypothetical choice situations is selected. To make it possible to estimate main-effects independent from potential first order interaction effects the 'foldover' is determined (Louviere, 1988). This transformation leads to 72 choice situations. In Figure 1 an example of a hypothetical mode choice situation is presented. Beside the two specified alternative, a third alternative (Other) is available that acts as a constant base alternative.

Attributes	CAR	BIKE	OTHER
Travel time between home and parking/shelter facility	15 minutes	25 minutes	
Search time for a free parking space	5 minutes	-	
Walk time parking/shelter facility to final destination	2.5 minutes	1 minute	
Guarded parking/shelter facility	yes	yes	
Quality of bike stand	-	excellent	
Compensation for travel costs	yes	yes	
Parking/storage costs	no	no	
What mode will you choose?	O car	O bike	O other

Figure 1: *Example of the stated choice task in the questionnaire*

travelled between a hypothetical home location and a hypothetical work location. For this trip they could choose from any mode like car, bus, bike, train, etc. They also had to assume that there were no hindrances like weather, luggage, or official journeys that influence the choice for a specific mode.

3. ESTIMATION OF MODEL PARAMETERS

The model parameters are estimated using the iterative weighted least squares method implemented in the computer program NTELOGIT (IMS, 1992). The dependent variable of the model consists of the relative choice frequencies of the specified modes (car and bicycle) in relation to the base alternative (other). For each attribute the main effect on the utility of the corresponding alternative is estimated. The main-effects represent the effects of car related attributes on the utility of the car, and represent the effects of bicycle related effects on the utility of the bicycle. In addition the effect of an attribute on the competing mode is estimated (representing so-called cross-effects, see Oppewal and Timmermans, 1991), that is, the effects of car related

attributes on the utility of the bike, and vice versa. Table 4 presents the significant model parameters for the short distance home to work trips.

With a RhoSquare of 0.72 the model for the short distance home to work trip fits the data very well. In addition, the likelihood ratio test shows that the model parameters significantly influence the mode choice behaviour. The likelihood ratio is equal to 1002.28 with 13 degrees of freedom (critical ChiSquare with 13 degrees of freedom is equal to 22.4). The alternative specific constants show that for the short distance trip cycling is more favourable than drive a car. In addition to this, the mode choice behaviour is influenced by both time related attributes (search time, travel time), regulation based attributes (allowance for travel cost, parking and storage costs), and destination related attributes (guarded bike stands, and quality of bike stands). None of the investigated cross-effects was significant, indicating that changes in car-related attributes

do not affect the odds ratio of choosing bike over 'other', and vice versa, that changes in bike-attributes do not affect the odds for car over 'other'.

Table 4: Significant model parameters of the '5km' stated choice model

attributes	attribute levels	mode	
		car	bike
constant		2.0045	3.3210
CAR			
search time	0 minutes	0.4068	-
	5 minutes	-0.1001	-
compensation of costs	yes	0.1515	-
parking costs	no	0.2283	-
BIKE			
travel time	15 minutes	-	0.4070
	20 minutes	-	0.1899
guarded bike stands	yes	0.6936	0.9234
quality	excellent	-	0.2350
	average	-	0.0271
storage costs	no	-	0.1468
Loglikelihood Random Choice model		-689.56	
Loglikelihood Converged Choice model		-188.42	
Likelihood Ratio: $-2[LL(0)-LL(B)]$		1002.28	
RhoSquare: $1-LL(B)/LL(0)$		0.72	

Almost all parameters have a sign according to general expectations. For example, the positive sign for parking costs means that the utility of the car alternative increases if commuters do not have to pay for parking at the work destination. On the other hand, if commuters have to pay for parking the utility for the car decreases. The sign for the bike-parameter of 'guarded bike stands' indicates that the utility of the bike increases if there is a guarded bike stand. The utility of the car alternative however also increases with the presence of a guarded bike stand. This is a cross-effect and means that the presence of guarded bike stands increases the probability of both car and bike relative to the 'other' alternative.

The model for the long distance home to work trip performs less than the previous model but is still satisfactory with a RhoSquare of 0.42 (Table 5). According to the likelihood ratio test, the model parameters influence the mode choice behaviour of commuters in this context significantly. The alternative specific constants show that the car is for this kind

of trip more favourable than the bicycle. In contrast to the previous model, only time related attributes (travel time and search time), and the quality of the bike stand influence the mode choice behaviour significantly.

Table 5: Significant model parameters for the '10km' stated choice model

attributes	attribute levels	mode	
		car	bike
constant		1.1706	1.0328
CAR			
travel time	20 minutes	0.5243	-
	30 minutes	-0.1136	-
search time	0 minutes	0.2796	-
	5 minutes	-0.0043	-
BIKE			
travel time	30 minutes	-	0.7120
	40 minutes	-	0.1213
quality	excellent	-	0.0414
	average	-	0.1991
Loglikelihood Random Choice model		-428.94	
Loglikelihood Converged Choice model		-247.76	
Likelihood Ratio: $-2[LL(0)-LL(B)]$		362.37	
RhoSquare: $1-LL(B)/LL(0)$		0.42	

4. VALIDATION OF MODELS

The previous section presented evidence for the internal validity of the model. Now the stated choice models are used to predict the revealed choice behaviour of the respondents. For that purpose, the data of 216 respondents could be used. Based on their actual home to work distance, respondents are divided into two groups: short distance commuters (less than or equal to 10 kilometre) and long distance commuters (more than 10 kilometre). All respondents have described their common mode choice behaviour during a whole week. For a regular week they reported (i)

how many times they go to work, (ii) what modes they have available for their home to work trips, (iii) what modes they travel and how many times, and (iv) what the travel time would be for each available mode.

Before elaborating the predictions, the scale parameters for both types (stated and revealed) of choice behaviour have to be compared. This comparison can be done by a test developed by Swait and Louviere (1993). The test results indicate that at conventional level, the scale parameters for both types of behaviour are the same.

Table 6 presents the results of the validation test. The observed mode choice behaviour has been compared with the predicted choice behaviour (calculated LL(b)) and the random choice behaviour (calculated LL(0)). This latter choice behaviour is calculated by splitting the number of home to work trips for each respondent equally over the available modes (i.e. each available or known alternative is assumed equally likely to be chosen). The likelihood ratio statistics (LRS) indicates that for both situations the estimated models perform significantly better than the random choice models.

Table 6: Results of the model validation based on revealed choice behaviour

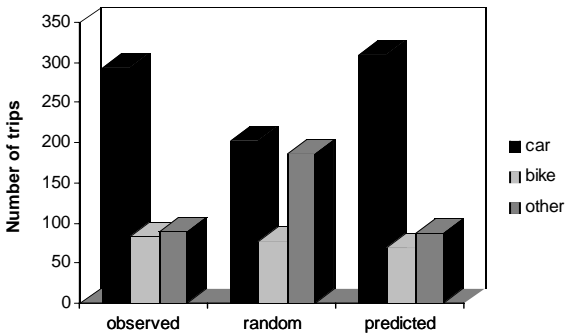
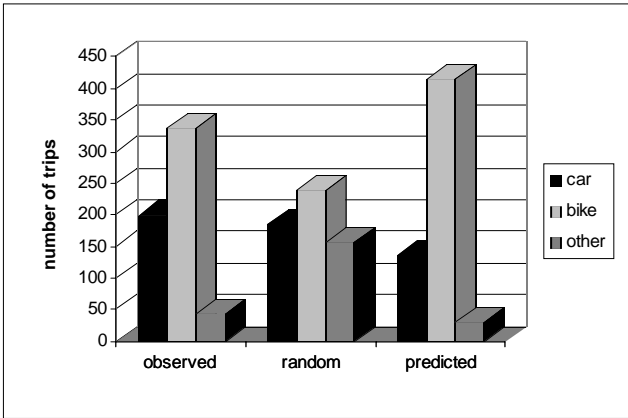
	5 kilometre	10 kilometre
LL(0)	-502.175	-380.700
LL(b)	-433.644	-315.150
LRS	137.063	131.100
Degrees of freedom	13	10
Critical chi-square	22.40	18.31
number of respondents	120	96
number of trips	580	465

Figure 4: Observed, random and predicted mode choice behaviour; 5 kilometre

Figure 5: Observed, random and predicted mode choice behaviour; 10 kilometre

Figures 4 and 5 show an overview of the total number of home to work trips as a result of the observation as reported in the questionnaires, the random distribution over available alternatives, and the model prediction. The differences between the modes for the random model are caused by differences in the composition of the respondents choice sets.

Both figures show that the model prediction is more equal to the observed behaviour than the randomised behaviour.



However, the model overestimates the use of the bicycle for the short distance trips and the use of the car for the long distance trips.

5. CONCLUSIONS

To extend the existing knowledge regarding the use of bicycles in the home to work trips, this research tried to quantify the effects of various car and bicycle related attributes on commuter travel. The quantification was carried out by developing two stated choice models that describe the mode choice behaviour for two different distance classes. The investigated attributes for both cars and bicycles focus on travel time, and regulations and facilities at the work destination.

The model results show that for the short distance home to work trips, the mode choice behaviour will be influenced by both time related attributes, regulation based attributes, and destination related attributes. In the case of long distance trips, the mode choice behaviour is predominantly influenced by time related attributes. The two validation tests indicate that the specified models describe the mode choice behaviour of commuters satisfactory. The results show the importance of facilities for cyclists at the work place especially for the short distance home to work trips. Because the majority of the employees lives at a short distance from their work, employers and planners should pay more attention to this kind of facilities. Long distance commuter are not sensitive for this kind of facilities.

Further research might focus on the following aspects. First, some of the attributes can be studied in more detail. For example, the allowance for travel costs can be specified in more detail so that the effects of different levels of allowance can be investigated. The attribute 'guarded bike stand' needs further attention as it seems to draw market share away from other modes than car. Second, the validation test can be extended by using choice data from other samples. Third, the research is conducted from one specific viewpoint: possibilities for the bicycle in the home to work trips in cities. The question is if the results found in this study are valid for other motifs, companies and areas.

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A CLEARING HOUSE FOR CYCLING EXPERTISE

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THE I-CE CLEARING HOUSE PROJECT

There is a worldwide demand for information on cycling matters. The existing information is not adequate to the real circumstances of the requester (specially in the developing countries). There is a lack of evaluation criteria that credit any particular source.

The I-ceCH will provide expertise on cycling by helping to formulate needs for information, provide a useful answer and guarantee credibility with I-ce's evaluation criteria, ...

The basis of the I-ceCH will be via Internet, with room for other means. I-ce will establish relations with other sources of information. The I-ceCH is not a business, and doesn't seek competition but cooperation.

The improvement of the circulation of information will enhance the development of cycling in all countries willing to, and will encourage others that never thought of it. It will, ultimately, provide a good direction towards sustainability.

ENGLISH

DAS I-CE CLEARING HOUSE PROJEKT

Es gibt eine weltweite Nachfrage nach Informationen über Belange des Fahrradverkehrs. Die vorhandenen Informationen sind für die realen Umstände der Nachfragenden (insbesondere jener in Entwicklungsländern) nicht adäquat. Es fehlt an Auswertungskriterien, die eine Aussage über die Zuverlässigkeit der jeweiligen Quelle zulassen würden.

Das I-ceCH wird Wissen über das Radfahren schaffen, indem es hilft, die Nachfrage nach Information zu formulieren, eine nützliche Antwort zu geben und mit Hilfe der Bewertungskriterien von I-ce Glaubwürdigkeit zu garantieren ...

Die Basis des I-ceCH wird das Internet sein, wobei durchaus auch Raum für andere Mittel zur Verfügung steht. I-ce wird Beziehungen zu anderen Informationsquellen aufbauen. Das I-ceCH ist kein Unternehmen und strebt nicht nach Wettbewerb sondern nach Zusammenarbeit.

Eine verbesserte Zirkulation von Informationen wird die Entwicklung des Fahrradverkehrs in allen Ländern, die dies wünschen, fördern und wird andere, die niemals auch nur daran gedacht haben, ermutigen. Sie wird uns letztendlich einen guten Weg in Richtung Nachhaltigkeit weisen.

DEUTSCH

I-CE-JEV (INTERFACE FOR CYCLING EXPERTISE) PROJEKT »CLEARING HOUSE«

Po vsem svetu obstajajo zahteve po informacijah o kolesarskih zadevah. Obstoječe informacije niso v skladu z resnično situacijo povpraševaljca (še posebej v deželah v razvoju). Pojavlja se pomanjkanje kriterijev za vrednotenje.

I-ce »Clearing house« (posvetovalnica) bo priskrbel strokovno znanje o kolesarjenju, katerega namen je pomoč pri oblikovanju potrebe po informacijah in ki bo priskrbelo uporabne odgovore in zjamčeno verodostojnost s pomočjo I-ce kriterijev za vrednotenje,...

Baza I-ce »Clearing house« bo na Internetu. I-ce bo vzpostavil veze z drugimi viri informacij. I-ce »Clearing house« ni podjetje in ne išče konkurence, temveč sodelovanje.

Izboljšanje pretoka informacij bo povečalo razvoj kolesarjenja v vseh deželah, ki si to želijo in bo spodbudilo druge, ki o tem niso nikoli razmišljali. Konec koncev bo zagotovilo dobro smer proti trajnostnemu razvoju..

SLOVENSKO

A CLEARING HOUSE FOR CYCLING EXPERTISE

THE NEED FOR TRANSFER OF INFORMATION

Cycling policies are in development all over the world, the bicycle is making its way up the agenda in the field of transport, the environment, health and other domains.

Therefore there is an urgent need for transfer of cycling expertise and experiences.

The quality and applicability of information however may be problematic and this is what we want to discuss at Velo City in relation to the needs.

The new technologies for the transfer of information make it the more interesting to look for innovative ways to bring together people with different kinds and levels of expertise and experiences.

INTERFACING

I-ce has developed a framework for the exchange of expertise in line with the way she is operating, as an interface: mobilising expertise, bringing different parties together, organising mutual exchange. In cooperation with ECF, UCI and international and national government bodies, we work on the establishment of a Clearing House for cycle expertise. A help desk will be established, the information needs will be analysed, information will be broken to cater the special needs, relations will be established with institutes and experts to get input and to refer to, and information will be evaluated and their quality tested.

There are already information centres in the field of traffic and transport and it does not make sense to create another one without making use of them and cooperating with them. The reason to create a new one is our experience that people with a certain request, have difficulty in knowing where to find the best answers for their problems and the best combination of information from different sources.

So the Clearing House will establish exchange and cooperation with existing information centres. It's reason for being there is only indicated by it's added value that puts the bicycle in the middle, connects all relevant information and gives tailor made advises.

CONTEXTUAL ANALYSIS

Tailor made advises are not easy to get. The exchange of information asks for much more than making a link between documentations. The value of data, measures and their results, principles and tools, only becomes real when the context in which information is gathered and for which information is needed, is being analysed and brought together.

E.g.:

- * In some countries, at least for same age groups, it is safer to ride a bicycle than to drive a car on a short trip. The question is how others can make use of this information to promote cycling and cycling policy.
- * It has been found that the safety return of advanced stopping lines for cyclists are much higher than the investments, but the return depends from different factors, such as bicycles and car volumes
- * more in general the options for road safety measure at crossings will be different in cases:
 - when only the traffic and road environment of the crossing itself is taken into account,
 - when the crossing will be designed in the framework of an area wide approach with traffic calming
 - when a new hierarchy of roads will be implemented to segregate through-traffic and other traffic.
- * to integrate bicycle promotion for commuters in transport management policies of companies, the policy will be different in a country with rather high bicycle use compared to low bicycle use, especially regarding actual bicycle use for commuting
- * the design of bicycle facilities will be different according to the share of motorised and non motorised traffic in a city or country and the position of public transport on the road.
- * the options for a local bicycle policy depend on national policies regarding transport, road safety, traffic regulations, data collection, capacity building etc.
- * a local bicycle parking policy depends on the way local authorities and railways companies organise their own responsibilities in this respect
- * the Dutch manual for bicycle facilities "Sign up for the Bike" is an illustration of the need for context analyses: it is in the first place a manual to explore the process of planning for the bicycle and she provides guidelines for high quality of measures, to enable specifications of designing begin made according to different situations.

This is why simple questions about creating better conditions for cycling, in many cases do not deserve simple answers. Simple questions demand an analysis about the process in which the request for information came up. Possible answers need analyses too, of the context in which experiences and expertise have been collected.

This is especially true for cycling policies, since the context of these differ much more than for example for road safety policies, international and national.

IMPLEMENTATION AND INVOLVEMENT

To improve policies in the interests of cyclists, it is very necessary to convince authorities of the benefits and the needs. The struggle is hard most of the times.

For implementation strategies, cooperation has to be established between:

- political aspects, such as public support, a financial system, policy decision making and planning documents,
- substantial aspects, such as technical qualification, know how, planning approach and manuals
- organisational aspects, such as procedures, regulations, research power and pioneering.

To realise implementation of a local bicycle policy, the results will depend strongly of the involvement of different actors. For the exchange of information it is therefore important to bring together at least road user organisations, governments(local, national and international, with respect to traffic, transport, health, the environment, the economy etc.), the private bicycle sector and research institutes and consultancies.

QUALITY AND APPLICABILITY

An important aspect of the mobilisation of expertise and experiences is quality control.

The methods for data collection in Europe differ largely so comparisons and international research face serious limitations.

In different countries manuals and guidelines have been developed and series of good and bad practices have been presented. One has to be aware of the assumptions and constraints that guided the results, if these are not being stated explicitly.

The results of evaluation studies may differ, especially between countries. This is e.g. the case when we compare the safety results of roundabouts for cyclists.

So the quality of information have to be assessed steadily.

Quality control and context analysis combined with an implementation strategy create the right conditions for applicability of information.

Besides, information exchange may be used to specify the need for further support and education, such as training, excursions and consultancies.

CONFERENCE WORKSHOP

At the Velo City Conference, we want to invite all who are interested, to discuss the design of a Clearing House for Cycling Expertise, the way it may operate to serve the interests of all who are working to promote cycling and the best way to establish cooperation.

SUMMARY

A Clearing House for Cycling Expertise has the aim to promote the transfer of expertise and experiences regarding cycling.

It will analyse the context of the demand and the expertise in order to provide for tailor made advises, execute quality control of information and support implementation strategies.

A Clearing House mobilises the information that exists all over the world, bringing different kind of actors together and stimulating mutual exchange and cooperation.

At the conference, we like to take the opportunity for an exchange about the best way the Clearing House can be at service and the best way to organise exchange and cooperation.

EFFICIENT EXCHANGE OF CYCLING KNOWLEDGE AND EXPERIENCE

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ENGLISH

EFFICIENT EXCHANGE OF CYCLING KNOWLEDGE AND EXPERIENCE

Cyclists and experts related to cycling have gathered a huge amount of valuable information and knowledge, which is growing from day to day. The information technology of today can make this information available to everybody in a way, not possible in the past.

The article discusses basic concepts of an information system, which would serve as a repository of accumulated information and knowledge related to cycling, and as a communication channel between information providers and information demanders.

Except the basic principles the article also discusses the steps to gradually develop the system, addresses the system architecture and ends up with a proposal of the technology to be used for implementation.

The concept of the proposed system is closely related to the renewed ECF mission statement agreed upon at the annual general meeting in 1998 and can be regarded as the start of a new ECF project called Velo-info.

DEUTSCH

EFFIZIENTER AUSTAUSCH VON WISSEN UND ERFAHRUNG ÜBER DAS RADFAHREN

Radfahrer und Experten, die sich mit dem Fahrradverkehr beschäftigen, haben eine riesige Menge an wertvollen Informationen und Wissen gesammelt, die von Tag zu Tag weiter wächst. Die heutige Informationstechnologie kann diese Informationen jedem auf eine Art und Weise zugänglich machen, wie dies in der Vergangenheit nicht möglich war.

Dieses Referat beschäftigt sich mit den Grundbegriffen eines Informationssystems, das als Speicher für akkumulierte Informationen und Wissen über das Radfahren sowie als Kommunikationskanal zwischen Informationslieferanten und Informationssuchenden dienen würde.

Mit Ausnahme der Grundvoraussetzungen setzt sich dieses Referat außerdem mit den Schritten auseinander, die zur allmählichen Entwicklung des Systems erforderlich sind, bespricht die Systemarchitektur und endet schließlich mit einem Vorschlag für die Technologie, die zur Umsetzung verwendet werden sollte.

Das Konzept des vorgeschlagenen Systems steht in engem Zusammenhang zur erneuerten Aufgabendefinition der ECF, auf die man sich anlässlich der jährlichen Generalversammlung 1998 geeinigt hat, und kann als Beginn eines neuen ECF-Projekts namens „Velo-info“ betrachtet werden.

SLOVENSKO

UČINKOVITA IZMENJAVA ZNANJA IN IZKUŠENJ NA PODROČJU KOLESARJENJA

Kolesarji in strokovnjaki na področju kolesarjenja so doslej zbrali ogromno koristnih informacij in znanja, ki se iz dneva v dan povečuje. Sodobna informacijska tehnologija lahko omogoči dostop do teh informacij vsakomur na način, ki v preteklosti ni bil možen.

Članek obravnava koncept informacijskega sistema, ki bi služil kot skladišče zbranih informacij in znanja, vezanih na kolesarjenje, in kot komunikacijski kanal med ponudniki informacij in povpraševalci.

Razen osnovnih principov članek opisuje postopno izgradnjo informacijskega sistema, oriše njegovo arhitekturo in zaključí s predlogom tehnologij, ki bi bile ustrezne za izgradnjo.

Koncept predlaganega sistema je tesno povezan z deklaracijo o misiji Evropske kolesarske zveze, sprejete na letni skupščini 1998 v Trondheimu, in ga lahko obravnavamo kot pričetek novega projekta ECF z imenom Velo-info.

FRIDAY

EFFICIENT EXCHANGE OF CYCLING KNOWLEDGE AND EXPERIENCE

INTRODUCTION

In different countries of the world, the traffic situation varies considerably. This is especially true in respect to cycling. In some countries the role of cycling is still decreasing and bicycles are losing their reputation, whereas in others it is increasing and slowly but constantly gaining the respectability it deserves. Moreover, there are some countries where cycling always was and still is a tradition. The position of cycling organisations associated in the European Cyclists' Federation is that cycling is in no way a problem, but a solution for the increasing traffic crisis. It, however, remains a question how to convince on this fact the people and particularly the politicians in those countries, where motor traffic has only begun to increase heavily, for the (temporary) joy of the majority of the inhabitants.

Independently of the way of how cycling groups are working in countries unfavorable to cycling (among which we will still find Slovenia unfortunately), these organisations and these countries need the knowledge and the experiences from countries with a better cycling situation. In this way, the development of cycling will accelerate significantly. Of course this is not the only necessary direction of information and expertise flow, but it is probably the most important one to assure a balance in the global evolution of the society.

According to the ECF mission statement, dissemination of information and knowledge relevant to cycling promotion, planning, and advocating is one of the ECF's most important tasks for the future. In this context ECF has decided to begin a new project called Velo-Info with the primary aim in establishing an information system which will be able to deliver information from the information sources (mainly cyclists' groups, but also other experts) to the information seekers.

But it is still an open question how to exchange systematically and efficiently the specific information and knowledge. In the next chapters a model is proposed, which enables a practical realisation whereby the economical motivation of all participants in the exchange process is considered as well. Except the exchange model the technological solutions are also proposed, especially those related to information technology.

KEY PRINCIPLES OF VELO-INFO

The basic principle regarding the Velo-Info information system is that both types of users: information providers and information demanders have to be constantly motivated to use the system. It is supposed that demand exist (otherwise it would be of no use to offer information), but this is not sufficient. Only easy accessible, good structured and comprehensible information has a value for potential demanders. Nowadays, as the information accessibility and quantity grows so rapidly, the claim for information quality is rising even faster.

On the other hand, information providers have to be motivated too. It seems that the desired motivation can be assured, if the information system registers the use of specific pieces of information. (A piece of information is considered to be a compact collection of data with an applicable content.) Statistic figures, popular top lists, and other ways of publishing references to specific information and its provider can raise the motivation, especially if the overall significance of the information system improves.

In case of Velo-info we also have to consider that especially at the beginning of the system operation most information providers will be ECF member groups, which might have very different and specific motives, except their wish to help with their experience and knowledge. But to consider all particular motivation factors at the design stage already would be a too complex task. The system should be flexible enough to consider the different motives and adapt to them.

Another important requirement is that the Velo-info system should run without much intervention from the system provider, the ECF. It is because ECF is a non-profit organisation with the primary goal to provide services and not to earn money.

Considering the above aspects and the overall aim, the key features of the system should be:

- simple access to the system and easy handling
- automatic processing of input information, based on a predefined classification system ("automatic information broker")
- different types of information with regard to different structure of data:
 - cases and examples (description of good and bad practice)
 - expertise (knowledge about solving the problems)
 - geographic maps and services

- experts (expert directory)
- links between different pieces of information
- a suitable organisation should implement and maintain the system, whereby ECF should cooperate in designing and managing the system
- Internet technology should be used to reach as many information providers and users as possible in a common way
- in the starting phase the information should be accessible free of charge to attract the potential users and to feed the system with an applicable quantity of information,
- in the mature phase information should be paid, whereby
 - the price for an applicable unit of information should be based on quantity and quality
 - a variable quality factor of an information unit should be determined automatically according to:
 - access counter, which will show how often a specific information unit was required, and
 - a mark given by users according to the applicability of the information
 - the income should be divided in three parts: one part remains with the system manager, one part goes to the account of information provider and one part goes to the ECF as the information broker
 - sponsors should be found to help starting the system and reducing costs, which would make the system more attractive
- the system should be build gradually, whereby the complexity would grow from simple archive of existing information (mainly papers and addresses) to a knowledge based expert system, which would be able to provide solutions to given problems and would also include images, plans, maps, video clips, etc.
- a demander-to-expert question-answer service would round up the system's functionality; the same pay system could be adopted or another motivation method introduced (see for example Experts exchange on <http://www.experts-exchange.com/>)

DEVELOPMENT STEPS

As already mentioned the system should grow gradually. The first step should enable access to existing information as soon as possible, since there seems to exist a high demand among many different people who are dealing with cycling on one side, and a wish to offer expertise and knowledge (laying in a "dusty chest" too often) by cycling experts on the other. The following development steps are proposed:

I. Simple information system (free access)

1. collect existing information in the existing form with minor classification (ECF Position papers, Bicycle Research Reports and the ECF address database seems to be a good start, attractive to many potential users)
2. develop Internet server for offering the information (on this field the ECF already made a step forward improving its web site)
3. develop mechanisms for "feeding" the system by information providers (which means making the web site bi-directional)

II. Advanced information system (pay access)

1. detailed classification and restructuring of the existing information
2. adding quantity counters, access counters and a mark field to every piece of information; they will provide the basis for the pay system
3. develop pay-flow mechanisms
4. develop question-answer subsystem
5. adding GIS functionality (geographic location, distance measuring, etc.) to support interactive maps

III. Expert system

1. develop a knowledge system based on the already established information database
2. build an expert system based on the knowledge base, specialised on problems related to cycling (planning, promoting, advocating)

From the provider aspect, the first stage of the system would require to convert the existing information to a digital form, add keywords and send the package to the system to store it. From the user aspect the first stage would offer simple queries based on the basic set of key words (like "Helmets AND campaign AND publication").

In the second stage the provider would have to structure and form the information he would like to input and describe every piece with keywords from a predefined hierarchically structured list. Maps would have to be digitized and

partly vectorized in order to provide GIS functionality. The user would be able to find information with an advanced query with more steps. Information would be available in multimedia form, including interactive maps.

The question-answer subsystem would provide a forum for solving specific detailed problems. The information gained could be added to the general database on request.

The third step would request to input not just information, but knowledge. This means the provider would have to input the procedure (in form of rules and facts) about how to solve a specific problem, and not just the description of the solution. In this third phase the system would not just show information corresponding to the keywords the user putted in, but would stepwise guide him to a specific solution through a dialogue.

SYSTEM DESIGN & IMPLEMENTATION

At present, the system is at the conceptual stage. Therefore it would be too early to try to fully describe its design and implementation. However, some main activities can be predicted for the first two phases:

- I. phase design activities (Simple information system)
 1. build classification index
 2. define the database structure
 3. design user interface
 4. design provider interface
 5. implement web server, pages and links to the database
 6. feed the system with available information, test, and run
- II. phase design activities (Advanced information system)
 1. build hierarchical classification index
 2. restructure and partition the existing information into optimally applicable units
 3. restructure the database
 4. add counting and marking mechanism
 5. add payment and pay-flow mechanism
 6. add GIS components

At the same time, the information technology for implementing the system can be anticipated. In the first phase a relational database system would perfectly serve for storing and retrieval of information over Internet. In the second phase a spatial database server would take responsibility over geographical data and functions. In the third phase a knowledge base would probably fulfill the expert system needs. (A sample of an Internet-based expert system tool, The CGIshell Expert System Shell, can be found on http://www.wmin.ac.uk/~clemenr/CGIPROLOG/cgi_shell.html)

For user interface implementation JAVA seems to be the appropriate tool, whereby active components should be used wherever possible to lower the programming efforts and to put the stability of the system higher. Many of such components already exist on the market (RDBS, GIS Internet servers, knowledgebase systems, etc.)

CONCLUSION

Although the demand for information is rising we are witnessing a phenomenon where more and more people are not willing to spend their valuable time "digging" for it (either in their own resources or otherwise). Even Internet, as the biggest "single" resource of information, has many disadvantages, since the data available is more similar to a second-hand shop than to a fast accessible and reliable resource.

If we want to promote cycling efficiently, we have to offer the available information and knowledge in a comprehensive way. Maybe we can avoid the many mistakes made in the past and get a little nearer to the wisdom, according to the saying "A fool learns on his own mistakes, a wise man on the mistakes of others".

UK CYCLE AUDIT AND CYCLE REVIEW PROCEDURES

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UK CYCLE AUDIT AND CYCLE REVIEW PROCEDURES

Cycle Audit is a reactive tool which helps to ensure that opportunities to provide proper facilities for cyclists are taken whenever changes are planned to the transport network. It is applied at up to four stages of the design process for a wide variety of schemes.

Cycle Review is a proactive tool which permits the "cycle-friendliness" of part of the transport network to be assessed systematically, and evaluates the broad impact of alternative policy options on the level of service afforded to cyclists. Cycle Review has wide application when developing local transport and environmental strategies.

The paper will describe national Cycle Audit and Cycle Review Procedures which have been developed for use throughout the UK, and which have been endorsed by Government.

CYCLE AUDIT UND CYCLE REVIEW-VERFAHREN IN GROSSBRITANNIEN

Cycle Audit ist ein reaktives Werkzeug, das hilft, sicherzustellen, daß Möglichkeiten zur Schaffung geeigneter Einrichtungen für Radfahrer wahrgenommen werden, wann immer Änderungen des Verkehrsnetzes geplant werden. Es wird in bis zu vier Stufen des Planungsprozesses auf eine große Vielfalt von Programmen angewandt.

Cycle Review ist ein proaktives Werkzeug, das eine systematische Bewertung der „Radfahrerfreundlichkeit“ von Abschnitten des Verkehrsnetzes ermöglicht, und bewertet die breiten Auswirkungen alternativer politischer Optionen auf der Ebene des Nutzens für die Radfahrer. Cycle Review wird im Kontext der Entwicklung lokaler Verkehrs- und Umweltstrategien in großem Umfang angewandt.

Dieses Referat beschreibt nationale Cycle Audit- und Cycle Review-Verfahren, die für den Gebrauch in ganz Großbritannien entwickelt und von der Regierung unterstützt wurden.

POSTOPKI SPREMLJANJA IN REVIZIJE KOLESARJENJA V VELIKI BRITANIJ

Spremljanje kolesarjenja je nazaj delujoče orodje, ki pomaga zagotoviti, da so vedno, ko se načrtujejo spremembe v prometni mreži, zagotovljene priložnosti, da se priskrbijo primerne zveze za kolesarje.

Revizija kolesarjenja je naprej delujoče orodje, ki dovoljuje "kolesarsko naklonjenost" dela prometne mreže, ki je določena avtomatično in vrednoti obsežen vpliv alternativnih političnih možnosti na ravni podpore, ki je nudena kolesarjem. Revizija kolesarjenja ima možnost široke uporabe pri razvoju lokalnega prometa in okoliških strategij.

Pripravek bo opisoval nacionalne postopke spremljanja in revizije kolesarjenja, ki so jih razvili za uporabo po vsej Veliki Britaniji in ki jih je odobrila vlada.

UK CYCLE AUDIT AND CYCLE REVIEW PROCEDURES

BACKGROUND

The achievement of demanding targets for increasing the amount of cycling in the UK set out in the National Cycling Strategy will depend, in part, on the effective planning and provision of transport infrastructure which is cycle-friendly, and which actively encourages individuals and groups to use a bicycle in preference to other travel modes when making suitable journeys.

In recognition that most changes to the highway network will continue to be made for reasons other than just assisting cyclists, the National Cycling Strategy encouraged all highway authorities to adopt cycle audit procedures so that opportunities are not missed to enhance cycling conditions. Additionally the National Cycling Strategy asked highway authorities to undertake cycle reviews of their networks as part of the process of producing local cycling strategies.

The production of national procedures for undertaking Cycle Audits of planned infrastructure improvements, and Cycle Reviews of the existing road system, were specific outputs from the National Cycling Strategy. Significantly, the use of these techniques was also endorsed in the Government's comprehensive transport policy statement which was published in July 1998.

When preparing the Cycle Audit and Cycle Review Procedures, a questionnaire was sent to the 186 local highway authorities throughout the UK. The response was most encouraging; 94 per cent either agreed or strongly agreed that the Procedures would be helpful. David Davies Associates was appointed by the Department of Environment, Transport and the Regions to develop the Procedures. The work was steered by a group of practitioners drawn from central government, local government, and cycling groups. The Procedures were developed in a draft form and trialed in seven different circumstances. The lessons from this trial were incorporated into the published version of the Procedures.

Full details of the Procedures, including a sequence of easy-to-use templates, has been published in a document called "Guidelines for Cycle Audit and Cycle Review" by the Institution of Highways and Transportation at 6 Endsleigh Street, London WC1H 0DZ, United Kingdom at a cost of £29 sterling.

WHAT ARE CYCLE AUDIT AND CYCLE REVIEW?

Although most highway authorities have policies to promote cycling, the majority of changes made to the highway are made for reasons other than to encourage cycling. The intention of Cycle Audit is to examine new schemes thoroughly to determine whether adequate safe and convenient provision has been made for cyclists. Cycle Audit is a reactive procedure which can be defined as:-

A systematic process applied to planned changes to the transport network, which is designed to ensure that opportunities to encourage cycling are considered comprehensively, and that cycling conditions are not inadvertently made worse.

The purpose of Cycle Audit is to ensure that:-

- An unblinkered, comprehensive view is taken of the opportunities to promote cycling whenever significant changes are made to the transport network.
- The design objectives of relevant highway schemes, and their execution, are cycle-friendly.
- Specific measures to assist cyclists are designed in accordance with best practice.
- Design standards are improved.

In contrast, Cycle Review is a proactive process which is designed to assess the cycle-friendliness of part of the transport network, and to indicate practical ways that conditions for cyclists can be improved. Cycle Review can be defined as:-

A systematic process, applied to existing transport networks, which is designed to identify their positive and negative attributes for cycling, and to assess ways in which those networks could be changed in order to encourage cycling.

The purpose of Cycle Review is to:-

- Comprehensively assess cycling conditions on a route, a network or a transport interchange.
- Identify those problems which most require attention.
- Enable the level of service - or the cycle-friendliness - of a route to be assessed objectively.
- Identify those policy measures which can be best applied to a route to improve service levels.
- Produce a framework for commissioning client briefs for design measures to improve conditions for cyclists.
- Develop a wider understanding of the needs of cyclists and ways to improve cycling conditions.

The overall aim of Cycle Audit and of Cycle Review is the same - to improve conditions for cyclists - but the procedures are quite different. Those associated with Cycle Audit are related to the design process for specific network enhancements, while those for Cycle Review are more of a discrete or periodic activity. The two procedures are complementary but independent, and need not be undertaken at the same time.

The two sets of procedures have been developed to be:-

- Consistent, objective processes which concentrate on observable factual information.
- Based on existing design principles.
- Flexible, so that highway authorities can adapt the procedures to reflect new technical guidelines.
- Reasonably simple and inexpensive to apply.
- Helpful in spreading cycling expertise more widely within an authority.

CYCLE AUDIT PROCEDURES

The encouragement of cycling needs to be an integral part of the design process for all relevant changes to the road network to help ensure that cycling plays its full part in meeting the demand for accessibility. For this reason the Cycle Audit procedures have been developed to be applicable to a wide range of transport schemes, promoted by both highway authorities and by developers.

The intention is to cast the net of Cycle Audit over a wide variety of schemes because cyclists will use the improvements which are undertaken, unless they are specifically prohibited from so doing. However, highway authorities do have limited staff resources at their disposal, and so a method of prioritising schemes in terms of their importance from a cycling viewpoint has been incorporated within the Cycle Audit procedures for use by authorities if they so wish. The route on which a transport change is planned is classified in one of three ways:-

- Cycle Proactive Route - where there is a clear policy to encourage cycling along that specific route, which is likely to form part of a designated cycle network.
- Cycle Friendly Route - where there is a general desire to facilitate cycling by introducing measures which accord with good practice.
- Cycle Neutral Route - which are chiefly in rural areas and where the opportunity to introduce specific measures to assist cyclists is low, having regard to the lack of funds and the likely usage.

If schemes on a Cycle Neutral Route are subject to a safety audit which will consider the impact of the scheme on cyclists from a safety viewpoint, then highway authorities may wish to rely on that mechanism rather than undertaking a Cycle Audit.

Because the quality of cycling facilities might well be greatest on Cycle Proactive Routes, the extent of the Cycle Audit is more detailed when applied to schemes built on such routes.

Link with the Design Process

The Cycle Audit procedures are linked closely to the process of designing a transport scheme. This process is divided into four stages - Design Brief, Preliminary Design, Detailed Design and Substantial Completion. Not all changes to the transport network will be subject to all four stages of the design process; it will depend upon the complexity of the scheme and the working practice of the individual authority.

Two separate Cycle Audit forms have been designed. The first is applied at the Design Brief and the Preliminary Design

stages of the inception of a scheme. The form is a short one, asking only five questions, and seeks to encourage some systematic thinking about how the scheme should be designed to encourage cycling. It applies a hierarchy of measures - traffic reduction, speed reduction, junction improvement, redistribution of the carriageway and off-carriageway facilities. Additionally, for schemes on Cycle Proactive routes, the Audit form checks that quality of the design is likely to be such as to encourage cycling. It examines the relationship between the scheme and adjacent links, the coherence of the infrastructure, its directness, attractiveness and safety.

At the two later stages of the design process - Detailed Design and Substantial Completion - a second Cycle Audit Form is used. This is more comprehensive and asks both the designer and the auditor to make judgements about the adequacy of the proposal from a cycling viewpoint. Advice on appropriate standards is given to help consistent judgements to be made; but designers are not expected to follow design standards in a slavish manner, but to have the experience and wisdom to apply them rationally in the particular circumstance.

Who is Involved?

The client who is responsible for commissioning a particular improvement scheme should be in control of the Cycle Audit, and should document the decisions which are made as a consequence of the Audit at each stage. A Cycle Auditor should lead the Audit and should involve the scheme designer at appropriate stages. The Auditor should be independent from the design process for the scheme. The Auditor will need a range of skills:-

- An awareness of the authority's transport policies and cycling strategy.
- Technical skills in traffic engineering.
- A cyclists perspective of the components of the scheme.

The Cycle Audit procedures are not particularly demanding in terms of staff time. The trials of the procedures suggested that, in total, the four stages of Cycle Audit would take between 3 and 4 person days. This total activity would be spread over a period of several months as the particular stages of the design process were completed.

CYCLE REVIEW PROCEDURES

There are three stages of Cycle Review:-

1. Determine existing conditions for cyclists by bringing together pertinent information about the infrastructure and the traffic using it. Much of this information will be held by the highway authority and will not require to be collected specifically.
2. Make a quantified assessment of the level of service afforded to cyclists using a route. This is a measure of the cycling quality or the cycle-friendliness of the route.
3. Assess the impact of a range of policy and physical measures on service levels for cyclists in order to evaluate broadly the most effective ways of encouraging cycling along a particular route or section of the transport network.

The publication "Guidelines for Cycle Audit and Cycle Review" contains a pro-forma to help authorities record relevant information about the condition of a route. The information includes traffic flow, speed, junction details, carriageway features, convenience, riding surface and safety. Where the characteristics of a route change markedly - for example, the number of traffic lanes alter or the speed limit changes - then the route should be divided into sections and data collected for each section.

Level of Service for Cyclists

The information is used directly to make the assessment of the level of service of a route, a route section or part of the network by examining the determinants identified by Landis and others (Transportation Research Record 1578, USA) :-

- Vehicle flow and composition,
- Vehicle speed,
- Junction type and frequency,
- Width of the lane/path for cyclists, car parking and protected space,
- Convenience - gradient, directness, continuity and signing,
- Riding surface,
- Attractiveness and personal security.

Each route or section can score up to 100 points and these are banded into six levels of service:

Service Level	Score	Typical traffic characteristics	Likely road type
A	81-100	Little or no motor traffic; low speeds, good passing width; no significant conflicts; good riding surface; lit; feels safe.	High quality cycle path; Well surfaced minor road; 20mph urban road.
B	61-80	Light/moderate traffic flow; good/adequate passing width; few conflicts; good riding surface.	Minor road; Well surfaced but unlit cycle path.
C	41-60	Moderate traffic flows; 85th % ile about 45kph; adequate passing widths; some minor conflicts.	Minor road: Local distributor.
D	21-40	Busy traffic, HGVs, buses: speeds about 65kph.	Urban single carriageway; Poor quality cycle path.
E	1-20	Heavy traffic flows; HGVs; speeds >65kph	Dual carriageway; Large roundabouts.
F	<0	Heavy flows: speeds >100kph; narrow lanes; unlit.	Narrow rural single carriageway; Dual carriageway; grade separated junctions

When a route is divided into sections because of its variable nature, the individual level of service scores can be combined by weighting them according to length to give a service level for the whole route.

Broad Assessment of Measures

The final stage of Cycle Review permits the impact of a range of measures which improve cycling conditions to be assessed quickly. The range of measure are the hierarchy of treatments set out in the Cycle-friendly Infrastructure Guidelines for Planning and Design (IHT, UK.) This hierarchy is to reduce traffic flows, reduce traffic speeds, improve junctions for cyclists, redistribute road space, and provide off-road facilities. The effect of each of these measures on a range of policy, financial and provision criteria can be scored according to their broad effect. It provides a comparative indication of which of the measures within the hierarchy is likely to have the greatest benefit to cyclists. Some of the measures can be combined in order to amplify the improvement in conditions which is possible to achieve. Additionally, the blend of likely measures can be fed into the level of service matrix to give an indication of the benefits which would be achieved for cyclists if the package was implemented.

At a time when proposals have to be carefully justified and prioritised before they can secure funding and be included into a firm programme of works, Cycle Review provides a mechanism whereby authorities can demonstrate that:-

- The correct routes have been selected for priority treatment,
- The range of measures to be introduced has been evaluated quickly against other possible treatments,
- The likely benefits of the package of measures on the level of service for cyclists has been assessed.
- The Design Brief which will begin the detailed design process has been produced from a rational procedure of data collection, systematic analysis and comparative evaluation.

A FINAL COMMENT

The pressure on space for individual papers at such a comprehensive conference as VeloCity means that it has not been possible to describe the fine detail of the national Cycle Audit and Cycle Review Procedures which have been developed for use throughout the UK. In particular, it has not been possible to include all the pro-formas which have been designed to guide the practitioner through the two processes. These are available, together with a much fuller description of the two techniques, in the Guidelines for Cycle Audit and Cycle Review, which is available from the Institution of Highways and Transportation at the address given in the first section of this paper.

"ASSESSMENT BIKE" MEASURES QUALITY OF CYCLE PATHS

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Ing. A.L. Bosch (1951) studied traffic planning and engineering at the Traffic and Transport Academy in Tilburg, the Netherlands. Since his graduation, he has worked as a traffic consultant and has done so for the last seven years with Goudappel Coffeng BV, traffic and transport consultants in Deventer. The projects in which he has been involved have covered such issues as public transport, bicycle traffic, integral quality and interactive planning processes. His current position in the traffic planning department involves coordinating public transport projects and projects carried out in the southern part of the country.

"ASSESSMENT BIKE" MEASURES QUALITY OF CYCLE PATHS

Many Dutch municipalities are trying to confine the rise in numbers of cars on the road by promoting the bicycle as an alternative means of transport. First-rate cycle routes, however, are vital to the success of this idea and must be designed in such a way as to enable cyclists to travel quickly, safely and comfortably.

In order to objectively assess the quality of a cycle route, Goudappel Coffeng developed a so-called assessment bike which is fitted with special measuring equipment for registering the quality of the road surface. It not only assesses bumps and hollows but also registers how long the bicycle waits at traffic lights or at other crossings, thus providing insight into the average speeds covered along cycle routes.

The assessment bike was used in a study into the quality of cycle paths in the Municipality of Zwolle, where it rated the comfort of seven of the thirteen principal urban cycle routes. The study also included a subjective assessment of the routes by volunteers from the Netherlands Cyclists' Association (ENFB). This data was used to calibrate the assessment bike.

ENGLISH

„TESTFAHRRAD“ MISST DIE QUALITÄT VON RADWEGEN

Viele niederländische Stadtgemeinden versuchen, das Ansteigen des motorisierten Verkehrs einzuschränken, indem sie das Fahrrad als alternatives Verkehrsmittel fördern. Erstklassige Fahrradrouten sind jedoch für den Erfolg derartiger Vorhaben von grundlegender Bedeutung und müssen so konzipiert werden, daß die Radfahrer rasch, sicher und bequem ans Ziel kommen.

Um die Qualität einer Radroute objektiv beurteilen zu können, hat Goudappel Coffeng ein sogenanntes Testrad entwickelt, das mit speziellen Meßgeräten zur Untersuchung der Straßenoberflächenqualität ausgestattet ist. Dieses Rad registriert nicht nur Erhebungen und Vertiefungen, sondern zeichnet auch auf, wie lange das Rad an Ampeln oder sonstigen Kreuzungen steht, wodurch Einblick in die Durchschnittsgeschwindigkeit einer Radroute gewährt wird.

Das Testrad wurde im Rahmen einer Untersuchung der Qualität der Radwege der Stadt Zwolle verwendet, wo sieben der dreizehn wichtigsten Radrouten der Stadt untersucht wurden. Die Studie umfaßte auch eine subjektive Beurteilung der Routen durch Freiwillige des niederländischen Radfahrerverbandes ENFB. Diese Daten wurden verwendet, um das Testrad zu kalibrieren.

Goudappel Coffeng wird mittels eines Diagramms / Referats erläutern, wie das Testfahrrad verwendet wird, wie es funktioniert und welche Ergebnisse erzielt werden.

DEUTSCH

"PREIZKUŠEVALNO KOLO" ZA MERJENJE KAKOVOST KOLESARSKIH STEZ

Mnogo holandskih mestnih uprav poskuša s promocijo kolesa, kot alternativnega prevoznega sredstva, omejiti naraščanje števila avtomobilov na cestah. Vitalnega pomena za uspeh te ideje so prvo-razredne kolesarske poti, ki morajo biti načrtovane tako, da omogočajo kolesarjem hitro, varno in udobno vožnjo.

Za objektivno ocenjevanje kakovosti kolesarskih poti je ustanova Goudappel Coffeng razvila t.i. "preiskovalno kolo", ki je opremljeno s posebno opremo za registriranje kakovosti površja ceste. Ta ne ugotovi le izboklin in lukenj, temveč

SLOVENSKO

registrira tudi čakalno dobo kolesarja pri semaforjih ali na ostalih križiščih, ter tako nudi vpogled v povprečno hitrost za celotno kolesarsko pot.

"Preiskuševalno kolo" so uporabili za proučevanje kakovosti kolesarskih stez v mestni občini Zwolle, kjer so merili udobnost sedmih od skupno trinajstih glavnih mestnih kolesarskih poti. V raziskavo so bile vključene tudi subjektivne ocene prostovoljcev Nizozemske kolesarske zveze (ENFB), ki so ocenjevali iste poti. Te podatke so nato uporabili za preverjanje podatkov dobljenih s pomočjo "preiskuševalnega kolesa".

Predstavniki Goudappel Coffenga bodo s pomočjo skice razložili, kako se "preiskuševalno kolo" uporablja, kako deluje in predstavili rezultate njegove uporabe.

TEST BICYCLE MEASURES QUALITY OF CYCLE PATHS

When cycle paths are of good quality, bicycles become a more attractive means of transport. But how does one measure the quality of a cycle path? To answer this question, Goudappel Coffeng BV has come up with a new measuring instrument: the Test Bicycle. The Test Bicycle can give policy-makers an objective measure of the comfort and attractiveness of a cycle path.

Many municipalities are attempting to curb the growth of motorised traffic by promoting the bicycle as a means of transport. Their efforts can only succeed if there are good quality cycle paths available. Such paths must be designed in a way that ensures quick, safe and comfortable travel.

BICYCLE-FRIENDLY INFRASTRUCTURE

In this paper, cycle paths that satisfy cyclists' wishes and demands are described as "bicycle-friendly". To qualify as bicycle-friendly, a cycle path must satisfy the following minimum requirements:

- it must be coherent;
- it must offer direct routes; it must be safe;
- it must be attractive;
- it must allow the cyclist to travel in comfort.

It is easy enough to determine whether a cycle path is coherent, direct and safe; the researcher isn't even required to leave his desk. Policy-makers, however, want to know whether a cycle path offers a comfortable and attractive ride as well. Is the surface littered with bumps and holes or is it smooth and flat? Do cyclists constantly run into delays, or can they cycle on merrily without stopping? The Test Bicycle can give objective answers to all these questions.

HOW DOES THE TEST BICYCLE WORK?

The Test Bicycle is fitted out with special measuring instruments that record the quality of the road surface. The equipment consists of four interrelated elements: an accelerometer, a cyclometer, a laptop computer and a display.

Special equipment on the Test Bicycle measures the quality of the road surface

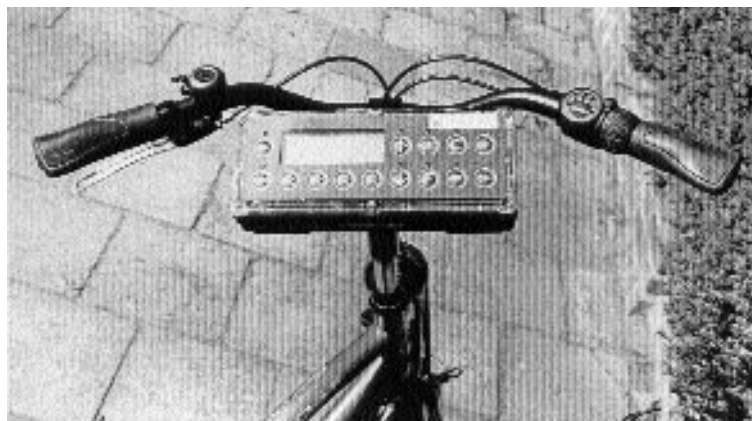


The accelerometer is attached to the front wheel of the bicycle. It measures the bicycle's vertical movements (jolts), accurately recording each bump or hole in the road surface. The cyclometer is attached to the back wheel and records the number of revolutions the wheel makes. The laptop computer converts the number of revolutions into the distance travelled.



The Test Bicycle not only records bumps and holes, but also how long the bicycle has to stop and wait at a traffic signal or other crossing. It also records the cycling speed.

The testing procedure is as follows. An experienced researcher rides the Test Bicycle on the cycle path selected as the object of the study. He does this several times to eliminate chance from influencing the measurements. The display, which is attached to the handlebars, shows him the route he should be taking, the speed at which he should be travelling and the required direction. All this information is pre-programmed into the Test Bicycle's "on board computer".



Special equipment on the Test Bicycle measures the quality of the road surface

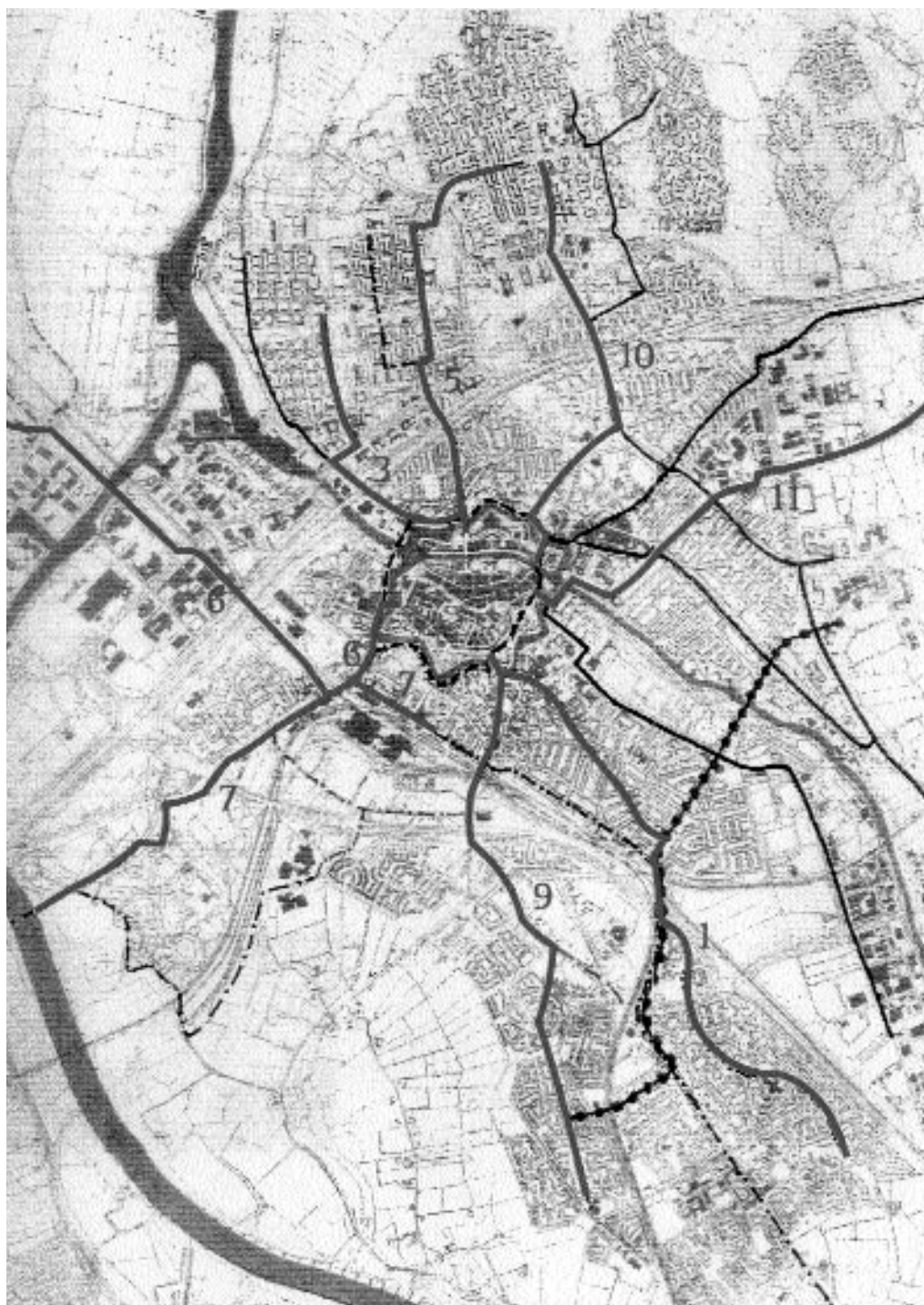
As the data are recorded, they are stored in the laptop, which is secured to the carrier. Taken as a whole, they give a good impression of how comfortable a ride the cycle path provides and how often a cyclist encounters delays en route. That makes it much easier than before to determine which steps have to be taken to improve the quality of the cycle path.

THE TEST BICYCLE AT WORK

In Zwolle (a town of 100.500 inhabitants), cyclists are everywhere. In fact, of the total number of journeys made by inhabitants in 1995, 40% were made by bicycle. For journeys of up to 5 km, that figure was 52.3%. That makes Zwolle number one on the cycling charts in the Netherlands. The city administrators recognise the importance of having an adequate bicycle-friendly infrastructure and wish to maintain or improve it.

The most important sections of Zwolle's main cycling infrastructure are the main cycle paths. After consulting the city administrators and the ENFB (Zwolle chapter), Goudappel Coffeng selected seven paths for further testing. These are paths

that form an important link between the city centre and surrounding neighbourhoods, including the bridges providing access to the city centre. Added up, the seven paths are approximately 25 kilometres long.



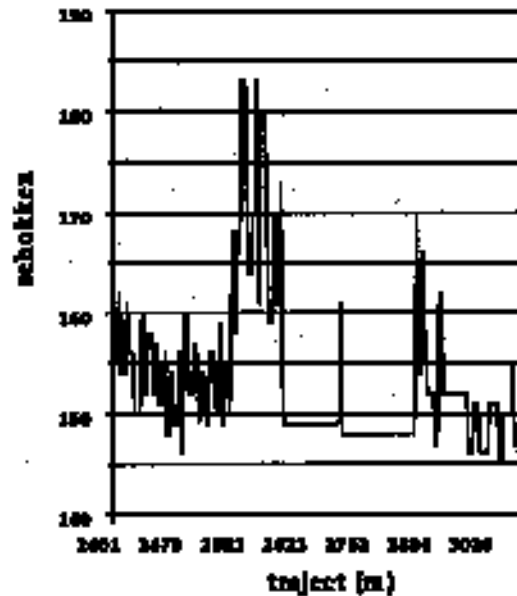
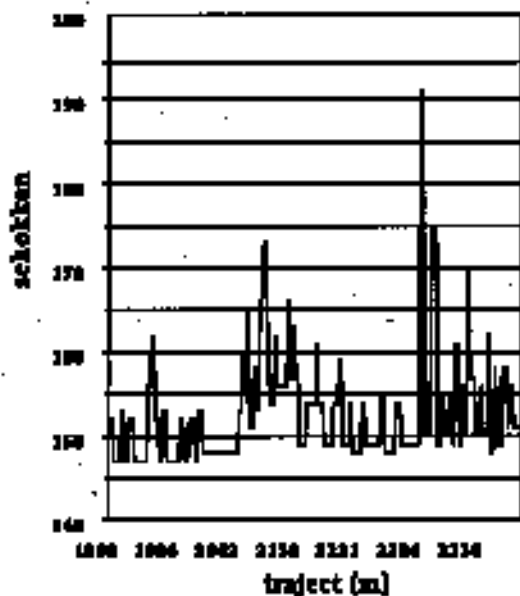
Seven main cycle paths

To analyse the paths, and specifically certain stretches of path, in detail, the paths were divided into sections. The boundaries between the sections were formed by changes in the path design (separate from or adjoining the road), the type of paving used, the traffic installations along the route and other distinguishing elements such as crossings over railway lines or canals and major junctions.

TEST RESULTS

A. Testing with the Test Bicycle (quantitative)

Goudappel Coffeng's experienced researcher performed three trials on each of the seven main cycle paths. In terms of the comfort of the path, the test period (day and time) and the number of tests were less relevant than they would have been if measuring the number of delays. What was important was that the researcher maintained a constant speed (with variable speeds, the vertical movements vary as well) and that he followed an (imaginary) line (in other words, he did not deliberately try to hit all the bumps and holes on the path). A protocol was set up for the cycling trials.



The quality of the road surface shown in clear and

straightforward displays

B. Qualitative evaluation by cyclists

To determine how the different criteria would be judged in qualitative terms, members of the ENFB cycled the paths three to four times and gave their opinion on certain sections of path.

Goudappel Coffeng designed the evaluation forms regarding the "comfort" aspect for this section of the study. The ENFB added the criteria traffic safety, subjective safety and identifiability to the forms. An example is included in Appendix 1.

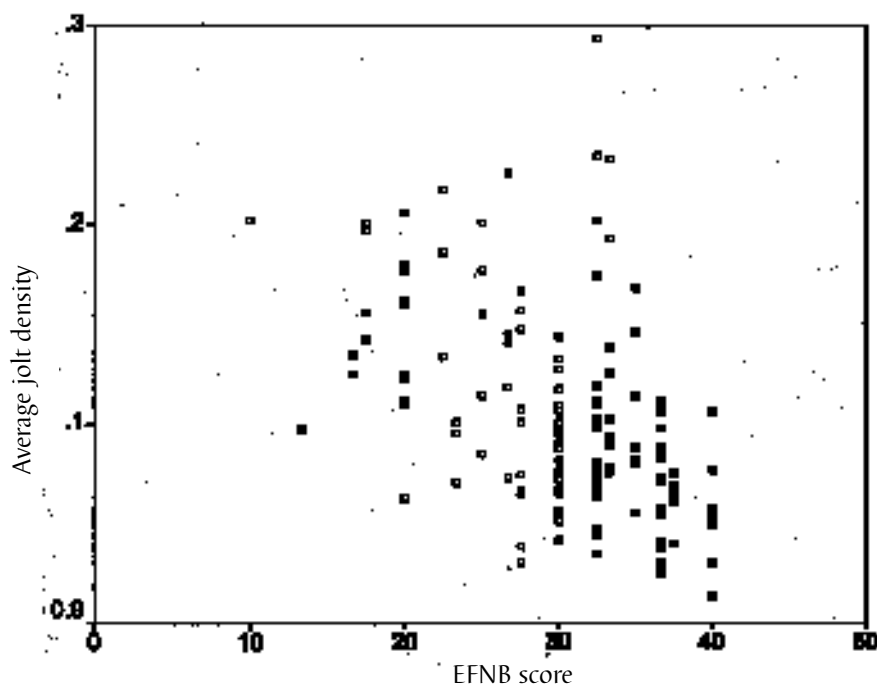
The various criteria - i.e. the quality of the road surface, traffic safety, general public safety and identifiability - could be awarded scores of poor, inadequate, adequate and good.

In terms of time spent waiting, the members were allowed to choose between no delays, acceptable delays, long delays and unacceptably long delays.

The members were encouraged to comment on the criteria. Regarding traffic safety, general public safety and identifiability, they listed a number of causes which they had noted for each section.

C. Instrument design

As the task was to find a "unit of measure" for what the Test Bicycle is to record as "comfort", the results of the quantitative and qualitative tests conducted on the seven cycle paths were compared. After a number of statistical manipulations, it became clear that the number of jolts per unit of length showed the greatest correlation as a criterion. The limit was 0.12 jolts per meter; above this limit, the evaluators regarded the section of cycle path as inadequate.



Relationship between the ENFB score and average jolt density.

CONCLUSIONS:

- Like other road users, cyclists like to travel in comfort. The Test Bicycle makes it possible to measure the "comfort" of a cycle path or section of cycle path in an efficient manner.
- The unit of measure "number ofjolts per unit of length" provides a sound basis for formulating the comfort criterion.
- The size of the jolts has yet to be considered; a large jolt, for example at a railway crossing, is considered to be uncomfortable, whereas many small jolts (for example on coarse road metal) is not regarded as uncomfortable.
- Testing will continue.

AUDITING LOCAL CYCLE STRATEGIES IN THE UK

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Rachel Goodman, is researching for an Ph.D in the field of travel demand management.



FRIDAY

AUDITING LOCAL CYCLE STRATEGIES IN THE UK

This presentation reports on a project which will audit the extent to which British Local Authorities have adopted the Model Local Cycling Strategy as set out in the National Cycle Strategy of 1996. We are interested to see the extent to which local circumstances have modified the approaches. By auditing local strategies for issues such as hardware vs software, community involvement, traffic restraint and demand measurement we will be able to:

- evaluate local cycle strategies on a set of standard criteria;
- indicate likely outcomes; and
- recommend corrective action.

PRÜFUNG LOKALER FAHRRADSTRATEGIEN IN GROSSBRITANNIEN

Dieses Referat berichtet über ein Projekt, das bewertet, inwieweit britische Lokalbehörden die in der National Cycling Strategy aus dem Jahr 1996 enthaltene Model Local Cycling Strategy umgesetzt haben. Wir möchten herausfinden, inwiefern die lokalen Umstände die Ansätze verändert haben. Durch die Überprüfung lokaler Strategien für Bereiche wie Hardware vs. Software, Einbindung der Gemeinschaft, Verkehrsbeschränkung und Quantifizierung der Nachfrage werden wir in der Lage sein,

- lokale Fahrradverkehrsstrategien auf der Grundlage einer Reihe von Standardkriterien zu evaluieren
- zu erwartende Ergebnisse zu benennen und
- Korrekturmaßnahmen zu empfehlen.

REVIZIJA LOKALNIH KOLESARSKIH STRATEGIJ V VELIKI BRITANJI

Predstavitev poročila o projektu, ki bo revidiral obseg, do katerega so se britanske lokalne oblasti prilagodile Vzorčni lokalni kolesarski strategiji, kot je bilo načrtovano v Nacionalni kolesarski strategiji leta 1996. Zanima nas do katere mere se je lokalno stanje prilagodilo novim stališčem. Z opazovanjem lokalnih strategij pri bistvih, kot so hardware proti software, vpletenost občine, prometna disciplina in zahteve, bomo lahko:

- ovrednotili lokalne kolesarske strategije na osnovi standardnih kriterijev,
- pokazali verjetne rezultate in
- priporočili popravljalne postopke.

AUDITING LOCAL CYCLE STRATEGIES IN THE UK

INTRODUCTION

This is a time of change in UK transport policy. The 1998 White Paper on Integrated Transport Policy is now being sub-divided into more detailed policy papers designed to achieve its overall goals (DETR, 1998). A new Local Transport Planning system is being created which will have green modes much closer to its heart than its predecessors and new charges on motoring and car parking promise to deliver the funding to achieve substantial modal shifts. Air quality and health issues continue to push cycling up the agenda and the National Cycle Strategy (NCS) has created the platform for change (Department of Transport, 1996).

The NCS included a 'model local cycling strategy', which was one of the proposals in the Model Cycle Policy Framework (MCPF) known as 'Bikeframe' (Cyclists' Public Affairs Group, 1997). The model strategies were based in part on a detailed study of six communities which represented best current practice in relation to key government objectives. It was thought that such a model policy framework on cycling would be helpful for local authorities to adapt to their own circumstances.

This presentation introduces a research project that will evaluate emerging local cycle strategies against the Bikeframe model strategy. We will see the extent to which Authorities have recognised the value of model strategies in guiding their decisions on key issues such as the balance between policies for hardware and software; involvement of the community; willingness to address traffic restraint and the recognition of the need to measure demand.

THE SURVEY OF BRITISH LOCAL AUTHORITIES

Our completed survey will be a census - i.e. of all Authorities - but in the interim we have undertaken a pilot survey of early responses. Eight strategies were selected from the English Midlands around our research base to provide a balanced representation of Counties, Metropolitan Boroughs, Cities and Districts. As the majority of Authorities have yet to complete any kind of strategy, whether good or bad, these comprise a sample of the most positive outcomes to date. It would be unreasonable to draw firm conclusions from such a small sample, but nevertheless it may be that we can detect some trends from this initial, brief review.

Table 1 shows how the Authorities perform against the criteria used by Bikeframe to describe the model strategy. The nine main strategy headings are in bold, with sub-headings italicized. Hardly surprisingly all of the Authorities have

Table 1: Sample local authority performance on strategy headings (bold) and sub-headingsKey: Y = Yes, N = No, CO, CT, CP refer to Cycle Objectives, Targets, Policies from *Bikeframe*

	County 1	County 2	City 1	City 2	Metro 1	Metro 2	District 1	Boro 2
Objectives	Y	Y	Y	Y	Y	Y	Y	Y
CO1 - to reduce car use	Y	N	Y	Y	Y	Y	Y	N
CO2 - encourages facilitates	Y	N	Y	Y	Y	Y	Y	N
CO3 - strategy integration	Y	N	Y	Y	Y	Y	Y	N
Targets	Y	N	Y	Y	Y	Y	Y	N
CT1 - usage	Y		N	Y	Y	Y	Y	
CT2 - modal share	N		Y	Y	N	Y	N	
CT3 - casualties	Y		N	N	N	Y	N	
CT4 - theft	Y		N	N	N	N	N	
CT5 - child training	Y		N	N	Y	Y	N	
CT6 - package bids	N		N	N	N	N	N	
CT7 - TPP submission	N		Y	N	N	N	N	
CT8 - transport budget	N		N	N	N	N	N	
Timescales	Y	Y	N	Y	N	Y	N	Y
Policy Context	N	Y	Y	Y	Y	Y	N	N
Full account of govt aims/guidance		N	Y	Y	Y	Y		
Mechanisms	Y	Y	Y	Y	Y	Y	Y	Y
Engineering	Y	Y	Y	Y	Y	Y	Y	Y
Audit - CP1 - audit schemes	Y	Y	Y	Y	Y	Y	Y	N
CP2 - strategic renew	Y	N	Y	Y	Y	Y	N	N
Networks - CP3 - on highway	Y	Y	N	Y	Y	Y	Y	Y
CP4 - route priority	Y	N	Y	Y	Y	Y	Y	Y
CP5 - hierarchical design	Y	N	Y	Y	Y	Y	Y	N
CP6 - gives cyclists priority	Y	N	Y	Y	Y	Y	Y	N
Maintenance - CP7	Y	N	Y	Y	N	Y	N	N
Planning control - CP8 - no severance	Y	N	Y	Y	Y	Y	Y	Y
CP9 - planning gain	Y	Y	Y	Y	Y	Y	Y	Y
CP10 - protect corridors	Y	N	N	Y	Y	Y	Y	N
Monitoring - CP11	N	N	N	Y	Y	Y	Y	N
Public transport integration - CP12	Y	Y	Y	Y	Y	Y	Y	N
Help soft road users - CP13	Y	N	N	Y	N	Y	Y	N
Cycle parking - CP14 - adequate	Y	N	Y	Y	Y	Y	Y	Y
CP15 - design standards	Y	N	Y	Y	Y	Y	Y	N
Encouragement	Y	Y	Y	Y	Y	Y	Y	Y
Danger reduction strategy - CP16	Y	Y	Y	Y	Y	Y	Y	N
Theft reduction strategy - CP17	Y	N	Y	Y	N	N	N	N
Employer initiatives - CP18	Y	N	Y	Y	Y	Y	Y	Y
Schools transport policy - CP19	Y	Y	Y	Y	Y	Y	Y	N
Complementary publicity - CP20	Y	N	Y	Y	Y	Y	Y	Y
Education	Y	Y	Y	Y	Y	Y	Y	N
Local cyclist consultation - CP21	Y	Y	Y	Y	Y	Y	N	
Training - CP22 - adult	Y	N	N	Y	N	N	Y	
CP23 - child	N	N	Y	N	Y	Y	N	
Other road users - CP24	Y	Y	Y	N	Y	N	N	
Enforcement	Y	N	Y	Y	N	Y	N	N
Highest priority - CP25	N		N	Y	N	Y	N	
Monitoring	Y	Y	Y	Y	Y	Y	Y	N
CP26 - to measure progress to target	Y	N	Y	Y	Y	Y	Y	
Staffing	Y	N	N	Y	N	Y	N	N
CP27 - ensure adequate staff	Y			Y		Y		
Funding	N	N	Y	Y	Y	Y	Y	Y
CP28 - establish budgets			Y	Y	Y	Y	Y	Y
Action Plan	Y	N	N	N	N	N	Y	N
Cycle friendly road network	Y						Y	
Complementary infrastructure	Y						Y	
Complementary publicity	Y						Y	

objectives. Two Authorities do not include **targets** and although five of the remainder adopt the national target of doubling cycle usage by 2002, there is less support for more specific targets on safety, training etc. All Authorities include **mechanisms**, as detailed below, but thereafter the degree of commitment appears to weaken, with only three of the Authorities prepared to ensure that there is adequate **staffing**. Furthermore only two are able to set out timescales and

action against a list of criteria to form an **action plan**. On the other hand, six intend to establish adequate budgets for **funding**. Generally speaking, there is considerable agreement over the main strategy headings between Authorities and the Model Cycle Policy Framework, but this does not guarantee action. Indeed, even at this level, it is noticeable that it is the policies that require the strongest commitment that have the weakest support.

All eight authorities intend to complete engineering measures - and the agreement with the MCPF is greater here than on any other issue. What is of concern is that only half of them intend to undertake sufficient monitoring to assess if the hardware is having the desired effect. The same problem appears when it comes to software policies. Whilst all eight intend to encourage cycling, examination of the sub-headings shows more support for those areas where existing general policies are already in place (eg. cycling in safe routes to school projects, green commuter plans and 'Travelwise' initiatives) and less for new and more difficult areas that are specific to bicycles, such as a theft reduction strategy. Similarly, seven out of eight feel able to sign up to the idea of education, but only three can convert this into specific adult- or child cycle training programmes. For cyclists enforcement of speed limits is a vital issue, but only two authorities are prepared to ensure that 'enforcement of traffic law receives the highest priority'.

AN EXAMINATION OF TWO CONTRASTING COUNTY POLICIES

Though cycle strategies are relevant to all LA levels, inevitably it is the larger units such as the Counties that are more likely to take the lead. The stance they take is important not just for themselves but for the tone they set for smaller districts. The two County strategies in the sample are polar opposites and contrasting them is instructive.

County One closely follows the Bikeframe guidance, repeatedly picking up the recommendations in their entirety or modifying them positively for local needs. The full range of issues are addressed, there is a clear understanding of the need for traffic reduction and a realization of the parallel importance of hardware and software. However nothing is costed, there is no budget and indeed there is no comment at all on funding. At best this could be interpreted as understandable uncertainty given the changeover from the old funding regime to the new Local Transport Plans. At worst, one could see this as a wish list: without a price tag, anything and everything is possible. Until we see the budget allocation, one must suspend judgement - but overall the positive tone of the document bodes well for the future.

County Two, on the other hand, does not include **targets**, an **action plan** or discussion of **funding** and **staffing**. **Targets** are not used because 'setting targets is misleading and inappropriate without firm Government undertaking on funding issues'. The model **objectives** are replaced by a set which is locally-derived, not necessarily prioritized or reasoned, and much weaker. **Timescales** are not concrete and the **policy context** is acknowledged as background rather than as a guide to County strategy. There are plenty of mechanisms, but these are partial and poorly integrated. There is no mention of enforcement at all, and though there are initiatives for engineering, education and encouragement there are major gaps and an all-pervading sense of doing the minimum possible.

What is really disturbing about this strategy is that it is based on a lack of awareness of best practice elsewhere, for example in the way that it creates its very own 'barriers to cycling' which are not borne out by research findings in the UK. It identifies these as the high degree of physical effort; the inconvenience of cycling during inclement weather; and the lack of road safety for cyclists. These are cited as being barriers to 'many people', without saying from where this information was derived. We know of no recent surveys that identify weather or terrain as major barriers to cycling in general - though of course they may dissuade cyclists on particular days or for particular journeys. The key point is that in countries where policy is supportive these 'obstacles' become minor. It would seem here that the perceptions held by the writers of such strategy documents are greater barriers than those held by the potential cycling population. We might note that, in contrast, the model strategy does not discuss 'barriers', but stresses 'changing attitudes', a subtle but important difference. In this perspective, it speaks of 'safety', not 'danger' and of hills as 'fitness benefits' rather than 'problems'.

There is no measurement of demand in the County Two strategy, so we see routes drawn on maps without any evidence that they go to places that cyclists want to go. Moreover, in this County, there is apparently little need for traffic restraint for cycling to bloom. There are eight times as many policies concerned with the provision of cycle lanes and cycle tracks as there are on traffic reduction. This strategy is a product of a perspective that sees solutions in terms of facilities, despite overwhelming evidence that building cycle tracks alone and without accompanying measures does not increase the levels of cycling (Hartman, 1997). Instead, with limited resources, the creation of new cycleway infrastructure should be seen as secondary to the creation of safe provision for cyclists to make use of the existing highway infrastructure.

When it comes to encouragement of cycling in the County, the document becomes particularly weak. Bikeframe talks of a 'a sustained programme of complementary publicity', which might include activities such as specific publicity (including maps) for new routes and facilities; integration with health campaigns; leisure cycling promotion and events and mass rides. Some of these approaches are mentioned in the County One strategy, but there is no sense of the

critical importance of marketing to the success of cycle promotion. Cycle promotion in general must be given equal priority with infrastructure provision and a regular, systematic plan must be devised for the promotion of cycling.

County Two has rejected the Bikeframe model and offered a bespoke policy that is inferior in almost every way. 'Reinventing the wheel' is neither sensible nor effective: this strategy will almost certainly fail to increase cyclist numbers and by so doing will bring yet more disrepute on planning and setting aside resources for cycling. We do not know why it has adopted this approach. It may be a funding problem, which is soluble with time. More seriously, especially if this is in any way representative of other Counties, it may be because it has no real belief in a bicycle policy and has decided to take a facilities-led approach as the route of least resistance. Building facilities may well be more tangible for politicians and can re-deploy redundant highway engineers. However, only where commitment to software is evident will we be able to recognise an Authority which has understood the real need for change and is prepared to re-orientate its transport policies in a way which many powerful opponents will see as 'radical'.

CONCLUSIONS

We may reach conclusions on two levels. On our small sample, we may note that the model strategy is proving of great value to most Authorities, though there is a predilection for engineering and a relative weakness in software application. More disturbingly, we have seen how it is possible for a major Authority to take such an idiosyncratic view of policy formulation that the national guidelines become nearly meaningless.

On the methodology, it appears that when the survey is complete we can expect to form a clear picture of the likelihood of goals being achieved. The key point here is that we are not auditing facilities, but auditing strategies that overarch them. Auditing facilities, which other researchers are doing, is obviously necessary to see what tangible progress is being made for cyclists on the ground, but unless facilities are embedded in an effective strategy they may fail to achieve meaningful modal shift.

Moreover, the development of hardware may draw attention away from equally important elements of strategy development, such as the co-ordination of formal inputs into the planning process. This encompasses the advocacy role of highway engineers, town- and transport planners and senior managers in advising the key partners in the process, such as council members, political partners, developers and a wide range of institutions involved in shaping the urban environment. It is important to decide how they will become involved in heightening interest and understanding of cycling as a significant mode of transport in the context of short distances.

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CYCLING IN GRAZ - SEEN FROM THE FEMALE PERSPECTIVE

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CYCLING IN GRAZ - SEEN FROM THE FEMALE PERSPECTIVE

Female mobility differs greatly from male mobility. There are not only great differences in transport needs, but also in transport opportunities. In their daily mobility, women use - voluntarily or not - their own feet, the bicycle or public transport to a much higher degree than men. The everyday life of women is characterized by many short trips which they organize in transport chains, in contrast to men who make few, but long-distance trips.

The main reason, why female mobility differs from the male one, is that everyday life of women is much more complex than everyday life of men. The main difference is the daily integration of gainful employment and reproductive work.

Until now, statistics, social and spatial science and planning neglect the special transport needs of women. The daily practical experience with walking, cycling and public transport, that women have because of the complexity of their daily life and their various responsibilities, is extremely neglected, because most politicians, planners and other decision-takers are male and normal procedures for citizens to join in planning procedures do not safeguard the active involvement of women.

In a practical outdoor workshop by bike (1,5 hours), the participants will check in how far Graz is bicycle-friendly from the women's perspective. In a following indoor workshop (1,5 hours), the results of this study tour are collected, structured and discussed, and a trial is made to define the concrete needs for improvement. A video gives an impression of transport problems and situations women are confronted with in daily live. With a short general introduction into the subject.

RADFAHREN IN GRAZ - AUS DER PERSPEKTIVE VON FRAUEN GESEHEN

Es gibt große Unterschiede zwischen der Mobilität von Frauen und der von Männern. Dies betrifft nicht nur den Mobilitätsbedarf, sondern auch die Mobilitätschancen. Für ihre täglichen Wege benutzen Frauen - egal, ob freiwillig oder nicht - in weit größerem Maße als Männer ihre eigenen Füße, das Fahrrad oder die öffentlichen Verkehrsmittel. Alltagsmobilität von Frauen ist durch eine große Zahl an kurzen Wegen geprägt, die sie in Wegeketten organisieren- im Gegensatz zu Männern, die meist wenige, aber lange Wege zurücklegen.

ENGLISH

DEUTSCH

Der Hauptgrund für diese Unterschiede liegt darin begründet, dass der Alltag von Frauen wesentlich komplexer ist als der der meisten Männer. Wesentlicher Unterschied ist die Integration von Beruf und Familienarbeit.

Statistiken, Planung und Raum- und Sozialforschung berücksichtigen Frauenbelange in der Stadt- und Verkehrsplanung bisher kaum. Frauen haben auf Grund ihrer vielfältigen Verantwortlichkeiten umfangreiche praktische Alltagserfahrungen. Die Planung leistet sich bisher jedoch den fatalen Fehler, diese Erfahrungen unberücksichtigt zu lassen. Denn die meisten Politiker, Entscheidungsträger und Planer in leitenden Funktionen sind männlich und Verfahren der Bürgerbeteiligung stellen die aktive Beteiligung von Frauen nicht sicher.

Bei einer Stadterkundung mit dem Rad (1,5 Std.) prüfen die Teilnehmenden die Fahrradfreundlichkeit von Graz aus Frauensicht. In einem anschließendem Workshop wird das unterwegs Gesehene gesammelt, analysiert, strukturiert und es wird versucht, daraus konkrete Forderungen für eine Verbesserung der Grazer Situation abzuleiten. Der Workshop wird durch eine Präsentation von Bildern aus dem Verkehrsalltag von Frauen sowie durch eine kurze Einführung in die Thematik unterstützt.

KOLESARJENJE V GRAZU - GLEDANO Z ŽENSKÉ PERSPEKTIVE

Mobilnost igra kjučno vlogo v življenju žensk. Njena kvaliteta določa dobro, slabo dostopnost, ali celo nedostopnost vsakdanjim destinacijam; kot tudi če je dnevno povezovanje plačane službe z neplačanim domačim delom in skrbjo lahko, težko ali celo nemogoče.

Dnevno povezovanje različno težavnih nalog naredi njihova vsakdanja življenja komplicirana. Njihove dnevne odgovornosti vključujejo mnoga dodatna potovanja. Skoraj je več ni ženske, ki ne bi morala skrbeti za gospodinjstvo. Kot matere, morajo ženske obvladovati svoja potovanja, kot tudi potovanja svojih otrok. Rezultat pa je, da imajo ženske bolj komplicirane mobilne potrebe. Zaradi nižjih prihodkov ima tudi mnogo manj žensk, kot pa moških dostop do avta. Tako uporabljajo za svoja vsakodnevna potovanja lastne noge, kolo ali javna sredstva prevoza v mnogo večji meri kot pa moški. Mobilnost žensk je okarakterizirana z mnogo krajšimi potovanji, ki jih organizirajo v vrstah prevozov. Dober kolesarski sistem služi ženskam v mnogih pogledih. Kolo je idealno pri le-teh prevoznih vrstah krajših potovanj. Posredni vplivi so še pomembnejši: otroci se lahko samostojno gibajo, kar prihrani ženskam mnogo časa.

Ženske so zaradi svojih vsakodnevnih izkušenj kot peške, kolesarke in uporabnice javnih transportnih sredstev pravi strokovnjaki v uporabi le-teh oblik transporta. Do sedaj je bilo to dejstvo zapostavljeno, saj je večina politikov, načrtovalcev in drugih mož, ki sprejemajo odločitve voznikov avtomobilov. Statistika še vedno pogosto pozablja na kolesarjenje in je tudi ne moti spol. Socialna, prostorska znanost in načrtovanje zapostavljajo prostorske vplive reproduktivnega dela in posebne prevozne potrebe žensk.

Izkušnje kažejo, da lokalna študija poti reši dragocene storitve v dokaj kratkem času, saj lahko kandidati pregledajo in prediskutirajo posebne urbane situacije pred ozadjem svojih osebnih doživetij. Med študijskim potovanjem skozi Graz ima mednarodna skupina delegatov konference možnost preveriti, kako daleč je mesto glede na prijaznost do kolesarjev, gledano iz perspektive žensk. Po tem študijskem potovanju sledijo v domači delavnici zbiranje, strukturiranje in pogovori o rezultatih; poskusi se tudi definirati konkretne potrebe k izboljšanju.

Predstavitev z diapozitivi nam da vtis kompleksnosti normalnega dneva matere štirih otrok ter obvladljivost njenih kompleksnih prevoznih potreb. Predstavitev nudi ozadje informacij o ženski mobilnosti.

CYCLING IN GRAZ - SEEN FROM THE FEMALE PERSPECTIVE

1. A SHORT INTRODUCTION TO FEMALE MOBILITY

Cyclists are young, sportive, love high-tech products and colourful outfits, ride without luggage - and are male. That's what advertisements and magazines show us everywhere.

Wherever we meet them in Europe, women normally do not disguise when cycling. And either their bicycles are anything special. Only few women cycle just for fun. For many of them, the bicycle is a daily means of transport, and an important one, too - although there are great differences between countries.

"Well, a saddle. But what else?"

People look astonished when they hear of female aspects of cycling, or more general, of women's transport needs, for the

first time. There is a general lack of awareness and knowledge of the specific transport needs of women. Far too often, they have assumed to be identical with men's. No wonder: most statistics are not broken down by gender, still often the bicycle is forgotten, and in social and spatial sciences, gender specific transport needs are a comparatively under-researched area. This subject is invisible, and thus non-existent!

Transport plays a key role in women's life. It determines access to a wide range of resources in society, including employment, education, childcare, health, policy, culture etc. Its quality can decide whether the integration of paid employment and unpaid domestic labouring and caring is easy or even impossible.

**The
myth
of full**

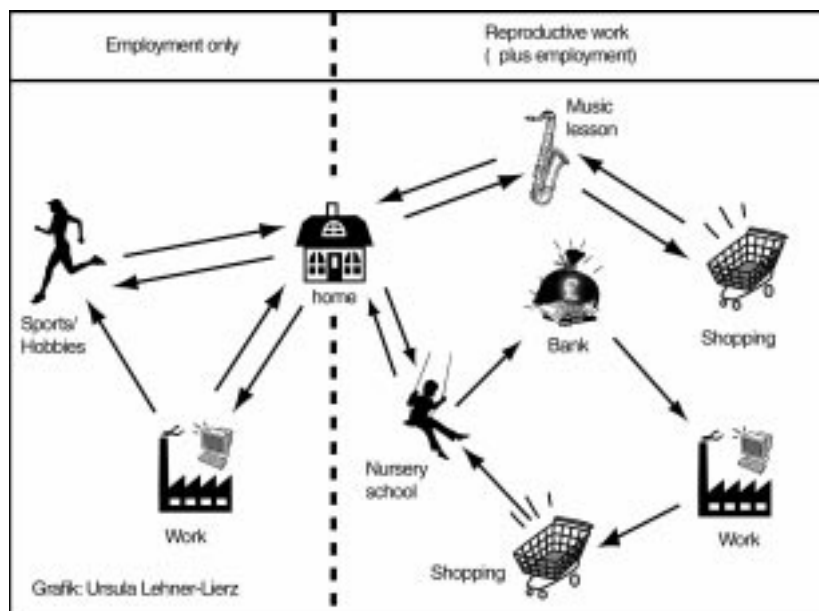


Figure 1: A normal day

motorisation

The gender imbalance in car availability is significant: while in Western Germany over 80 % of men aged 41-60 have full access to a car, this is true for only less than 43 % of women (Eastern Germany: resp. 70 and 25 %, 1991). In other countries, the situation is similar with varying values. Most women do not have a really free choice of the means of transport. Although the number of - especially young - women using the car is increasing, the majority walks, cycles or uses public transport.

In Western Germany in 1989 women used walking for 35 % of their trips (compared to 21 % for men) and drove a car for 23 %, compared to 48 % for men. For two of every three trips women walked, took the bicycle, used public transport or were passengers in a car, while men used the car for every second trip.

In the Netherlands, women make almost one third of their trips by bicycle, while men use it for 25 %. Between 30 and 60, Dutch women cycle nearly twice as much as men. In Germany, this relation is similar, although on a significantly lower level (respectively 6 and 12 %).

Thus for many women, the bicycle plays an important role. Changes in the quality of the cycling system affect them directly - and have direct impact on their time budget and quality of life.

Time managers

A normal day of a woman differs greatly from a man's. Opposite to men, there is nearly no woman who is not responsible for a household, and as mothers, women must also manage the activities and trips of their children. This daily juggling of various tasks involves many extra trips and makes everyday life rather complex. The daily time-table has to be planned very carefully and efficiently, because it depends not only of their own working time, but also of opening times of shops, authorities, nursery, opening and closing times of schools, music lessons, sport courses etc.

Transport chains

Female mobility is characterised by a high number of daily destinations over short distances, which they combine in transport chains. Employed women with children have the most complex transport needs. Partly in response to increasing road dangers and distances, escorting trips have risen markedly during the last 20 years.

A high-quality cycling system would serve women in many respects. The bicycle is the ideal means for these chains of short trips. But the indirect positive effects are of still more importance: Children could move independently, which is important for their healthy development - and it would save women much time.

Case: Sissel J., Drammen/Norway.

'The question how much spare time there is for parents (mothers) depends to a high degree of the number of children they got and the location where they live. Almost every child older than 5-6 years has 1-4 activities after school. I have four children (4, 10, 11 and 12 years old), and they go to 8 activities a week. Since we live near the school (1 km) and the city centre (1 km), and the neighbourhood is safe, the children can go and cycle independently to all destinations. If we lived outside the town, and I had to both drive and wait for them at their activities, this would have taken me at least 10-14 hours a week. Our youngest child has only one activity: he goes to kindergarten every day. The kindergarten is right next door to school, and his brother and sisters can accompany him (walking) one way five times a week. That too spares me a lot of time.'

Does your daughter like a wet child seat?

Besides a bicycle that fits and which is equipped for daily use and transport of luggage and children, women need a high-quality cycling network that safeguards easy access to all daily destinations and independent mobility of children. They need good parking facilities on the right place i.e. at home, at the work place, at stations,, bus stops, shopping centres etc. Bicycle racks must be stable for bicycles with luggage and child seats, and should be sheltered. Bicycle and public transport have to be linked well, there must be a dense network of service centres which repair bicycles within short time.

Fathers plan for their sons

<i>Table 1: After school activities of Sissel's children</i>							
	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Stina 12 years		handball	scouts church choir	tour? handball match?		singing in church?	
Jon 11 years		football hockey	scouts			tour?	football hockey
Kaja 10 years		handicrafts	scouts	church choir		tour? cup?	singing in church?
Mikkel 4 years	kindergarten	kindergarten	kindergarten	kindergarten	kindergarten		

We need more female planners, architects, politicians, scientists, who guarantee that our built environment does no longer prioritise the employed man with brief-case, going to work by car during rush-hour. Cycling must become a self-evident part of the curricula of technical universities. Political participation must guarantee that the daily experience of women is considered in planning. We need statistics which really describe female mobility, and which make the amount of service trips visible.

More cars are obviously not the solution! We do not only need a shift of men from car to bicycle. We should encourage women to keep using the bike and stop the trend of increased car use. We will never achieve sustainable mobility, if we

continue leaving half the population out of the picture.

2. STUDY TOUR AND WORKSHOP CYCLING IN GRAZ - SEEN FROM THE FEMALE PERSPECTIVE

Experience has shown, that local study tours deliver a valuable output in a rather short time, because the participants can inspect and discuss special urban situations before the background of their personal experience. During a short study tour through Graz, an international group of conference delegates has the opportunity to check in how far this city is bicycle-friendly from the women's perspective. In an indoor workshop following the excursion, the results are collected, structured and discussed, and the participants try to define the concrete needs for improvements in Graz.

The practical outdoor workshop leads to some typical daily destinations of women: places of work (administrations, retail outlets, medical centres, hospitals, post and telecommunication, schools ...), educational institutions, gyms, , doctors' general practices, hospitals etc. and additionally to some daily destinations of children: schools, kindergartens, swimming bath, music and dance schools, gymnasiums, playing-grounds and recreational areas. The delegates check the accessibility of these destinations by bicycle.

The participants also check the accessibility of public transport by bicycle and the quality of bicycle parking facilities. Are there parking facilities at the places where they are needed, are they sheltered and light up in the dark? Is it easy to park and lock a bike without bending, dislocating, heaving the bicycle? Does the bicycle rack give steadiness to the bicycle while it is loaded? Is there a facility that avoids that bags have to be placed on the dirty or wet ground while parking a bicycle? Are there places or routes where women feel unsafe: during the day or in the dark? What can be done to improve social safety?

A slide presentation gives an impression of a normal day of a mother of four children, and how she manages her complex transport needs. A lecture gives background information about female mobility.



Figure 2: The women's study tour through Graz.

QUANTIFYING ATTITUDES TO CYCLING: INTERIM FINDINGS

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ENGLISH

QUANTIFYING ATTITUDES TO CYCLING: INTERIM FINDINGS

This paper describes a project to investigate and quantify attitudes to cycling in the United Kingdom. The study explores ways of drawing on existing knowledge of motivational and behavioural change to create a conceptual framework. The aim is to allow promotional campaigning effort, nationally and locally, to be more effectively targeted on specific population groups and associated relevant messages.

The paper concludes that behaviour change is a staged process, and assistance in creating change is most effective if based on a situational baseline, an understanding of the readiness of individuals to change, consideration of the balance of forces for and against change and a full understanding of a person's approach to innovative ideas. Interim findings on how many of the UK population are at each stage of change are presented.

DEUTSCH

QUANTIFIZIERUNG VON EINSTELLUNGEN ZUM RADFAHREN: ZWISCHENERGEBNISSE

Dieses Referat beschreibt ein Projekt zur Untersuchung und Quantifizierung von Einstellungen zum Radfahren in Großbritannien. Die Studie beschäftigt sich mit Möglichkeiten, auf der Grundlage bestehenden Wissens über Motivations- und Verhaltensänderungen ein konzeptuelles Rahmenwerk zu schaffen. Die Zielsetzung dieser Anstrengungen besteht darin, sicherzustellen, daß Förderungskampagnen auf nationaler und lokaler Ebene effizienter auf spezifische Bevölkerungsgruppen und damit assoziierte relevante Botschaften zugeschnitten werden können.

Das Referat schließt, daß jede Verhaltensänderung ein mehrstufiger Prozeß ist und daß jede Hilfestellung im Hinblick auf eine Änderung dann am wirksamsten ist, wenn sie auf einer situativen Basis, dem Verständnis für die Bereitschaft des einzelnen, sich zu ändern, der Berücksichtigung des Kräftegleichgewichts zwischen den Argumenten für und gegen die Veränderung sowie einem vollständigen Verständnis für die Einstellung innovativen Ideen gegenüber beruht. Es werden Zwischenergebnisse darüber präsentiert, welche Anteile der britischen Bevölkerung sich momentan in den verschiedenen Stadien des Verhaltensänderungsprozesses befinden.

SLOVENSKO

MERJENJE ODNOSA DO KOLESARJENJA: ZAČASNE UGOTOVITVE

Prispevek opisuje projekt raziskovanja in merjenja odnosa do kolesarjenja v Veliki Britaniji. Raziskava se ukvarja s potmi uporabe obstoječega znanja o motivacijskih in vedenjskih spremembah za oblikovanje konceptualne sheme. Njen cilj je omogočiti promocijskim kampanjskim naporom, na nacionalni in lokalni ravni, učinkovitejše ciljanje na določene populacijske skupine.

Sklep prispevka je, da je sprememba vedenja stopenjski proces in da je pomoč pri ustvarjanju sprememb najbolj učinkovita, če temelji na situacijski osnovi, razumevanju pripravljenosti posameznikov za spremembe, upoštevanju ravnotežja sil za in proti spremembam ter popolnem razumevanju človekovega pristopa k inovativnim idejam. Predstavljene so začasne ugotovitve o številu prebivalcev Velike Britanije na vsaki stopnji spremembe.

FRIDAY

QUANTIFYING ATTITUDES TO CYCLING: INTERIM FINDINGS

INTRODUCTION

This paper describes a project to investigate and quantify attitudes to cycling in the United Kingdom by the Transport Research Laboratory on behalf of the UK government's Department of the Environment, Transport and the Regions (DETR).

BACKGROUND

The TRL research 'Attitudes to Cycling' (Davies et al, 1997) investigated the extent to which a conceptual framework could be used to describe opinions of cycling and of cyclists, and to be used for the development of future initiatives to promote cycling. In particular the study explored ways of drawing on existing knowledge on approaches to motivational and behavioural change developed in other spheres such as health psychology, social and behavioural science.

Situational Baseline

The framework first involves establishing a situational baseline, reflecting the belief that promotional campaigns are most likely to be effective if expressed in terms reflecting people's personal situation.

The main situational factors relevant to this context are:

- Does the person own a bike?
- does anyone else in the house own a bike?
- does the person have access to a car?
- how frequently does the person engage in short trips for varied purposes?

Contemplation of Change

The second part of the framework recognises that radical lifestyle and behaviour change comes about through a series of transitional stages from contemplation to action. Success is maximised by using initiatives aimed at guiding people a stage at a time down the route of behaviour change. As a result of a review by consultants MEL of applications of suitable theories, it was felt that the most relevant psycho-social model is the 'contemplation of change theory' by Prochaska and DiClemente (1984). This asserts that in making fundamental lifestyle changes in personal behavioural norms, the individual passes through various discrete stages. The model is commonly expressed in five key stages

- | | |
|-------------------|---|
| Pre contemplation | - change not being considered
- never thought of it
- say they would never consider it (rejection/denial of prospect of change) |
| Contemplation | - perceive a link between problem and behaviour
- could conceive of the possibility of change (interest raised in the prospect) |
| Ready for action | - costs and benefits known
- attracted to the prospect, actively considering actions and implications |
| Action | - experimenting with new behaviour
- has tried or experimented with change, has experienced effects, assessing |
| Maintenance | - towards relapse prevention
- may revert to previous behaviour, will benefit from reinforcement |

Motivational analysis

Recognising that decisions are made between alternatives based on balancing the 'pros and cons' of the status quo and the new behaviour, effective management of change seeks both to promote the benefits and mitigate the disbenefits of change. This approach derives from the 'kinetics of change' theory, which asserts that a balance of forces for and against change exists within the individual in relation to any issue. Change occurs when the forces or motivators for change exceed the forces resisting change. The balance of forces is influenced by a number of sources - the individuals themselves, close significant others, peer groups, cultural norms and the external physical environment. This includes reference to, but is not explicitly based upon, the theory of planned behaviour as developed by Ajzen & Fishbein

(1990). A study of attitudes to cycling by Forward et al (1997) suggested that 'habit' is another significant factor in determining the propensity to cycle.

Innovation

The third part of the conceptual framework draws on an established aspect of social marketing known as 'diffusion theory' or the 'innovation model'. This approach is used to identify segments of the market which are predisposed to taking up innovations (in this case a travel behaviour change) at different stages in their social acceptance, from favouring 'novelty' to 'norm'. New consumer products are often promoted with this social model in mind, given that the characteristics of the main buying market differ at different stages in a product's life cycle.

The approach used asserts that people may be classified into categories in relation to their predisposition towards innovative change. At one extreme this includes 'innovators' who are seen as venturesome, experimental, mavericks, which may comprise an 'avant-garde' minority sub-culture. At the other extreme there are 'laggards' who resist change, are suspicious, may never change at all, and may become a resistant sub-culture. This social approach is seen to overlay the other models set out above.

SURVEY METHODOLOGY

An approach is being used that makes best use of an established technique known as an 'omnibus' survey which ensures a very large representative group from the UK population. The Capibus, developed by Ipsos-RSL, consists of a continuous weekly survey of 2000 randomly sampled individuals who represent a cross section of the UK public. Full socio-economic data is collected at the same time as the questions of interest which allows cross referencing to other relevant databases (such as the National Census and National Travel Survey).

The disadvantage of the approach using an omnibus survey is that each question becomes very expensive (up to 1000 Euro). It is therefore advisable to ensure that each question used has been very well pilot-tested. For this study we are using a smaller, but still extensive, sample of 600 respondents answer a detailed questionnaire which also acts as a pilot for the omnibus.

The omnibus survey is scheduled for the middle of this year. The results presented below, therefore, are based upon the descriptive results from the pilot survey. These should be treated with some caution, since pilot surveys, by their very nature, are preliminary explorations.

RESULTS

a. baseline situational status.

An individual may be placed in one or more of the cells in a baseline matrix according to the main predisposing factors of short car trip behaviour and cycle ownership/use. The ultimate aim of the research is to generate statistical population profiles describing the characteristics of people tending to lie in any particular cell (for example, the demographic profile of the sort of people who are most likely to make short car trips to the shops, and have a bike but do not use it). If this were done, it would start to create a profile of a target market to which specific types of message or campaign strategies might be directed.

Preliminary results suggest that demographic issues are a strong influence on cycling as shown in the finding that the average household size for those who have cycled in the past two years (referred to hereafter as 'cyclists') is 2.25 persons compared to 1.58 for non-cyclists. The average number of people with a bike in a cyclist's house is 1.33 compared to only 0.51 for non-cyclists. More work will be needed to investigate the type of household that is likely to include cyclists.

Ownership of a bike is (predictably) a strong factor associated with use. Only 7% of respondents did have a bicycle in working order but stated that they have not cycled during the previous year.

Contemplation of change

The pilot survey described here attempted a direct approach to the measurement of contemplation of change. Respondents were asked which of five descriptions most closely matched their current status with regard to cycling. It was accepted that in doing this there would be potential methodological problems that may need to be sorted out before the full survey.

To a large extent this approach has been successful in revealing certain self-reported differences that illustrate a pattern of behaviour. However, there have been some problems, mainly associated with the confusion in wording from those who do cycle every day but say that they do not consider cycling.

A summary of the responses to the direct question about contemplation of change is shown in table 1.

Table 1: Responses in Pilot Survey to Direct Question related to Contemplation of Change

Status	All respondents	All non-cyclists	All Cyclists
Pre contemplation	25	51	2
Contemplation	25	42	10
Ready for action	17	7	25
Action	21	0	40
Maintenance	12	0	23

It can be seen that many

respondents are at the stage of not really giving cycling serious thought. This is particularly true for non-cyclists where the majority said that they "never really think about cycling"(pre-contemplation, or "Sometimes think about cycling but never seem to get round to it" (contemplation).

Motivational Equilibrium

Previous research by TRL has shown the importance of barriers to cycling, particularly the fear of traffic. The present research also found this fear of traffic, and also other barriers as summarised in table 2.

Table 2: Responses in Pilot Survey related to Barriers to Cycling

Question	Answer	Cyclists	Non-cyclist
The area where I live does not have enough cycling facilities	agree or strongly agree	61%	49%
I am not fit enough to cycle regularly	disagree or strongly disagree	89	72
I am too lazy to cycle	disagree or strongly disagree	71	52
Cycling is a convenient form of transport	agree or strongly agree	86	77

Diffusion Or Social Innovation Theory,

It was not considered realistic to ask people to describe their level of social innovation (for example by asking people if they considered themselves to be laggards). Some indicators are shown in the findings that 23% of cyclists (and only 3% of non-cyclists) agree or agree strongly that "people who cycle to work are considered to be slightly odd". Also significant was the finding that 58% of cyclists (and only 35% of non-cyclists) agree or strongly agree that they "sometimes enjoy the feeling of risk such as high speeds". There are still some unresolved inconsistencies in these responses that will need to be addressed before the next stage of surveys goes ahead.

DISCUSSION

Market Segmentation

It is considered an essential part of any promotional campaign that there should be an understanding of the composition of the target audience. One of the aims of this research, therefore, is to categorise the type of people who are potentially most easily influenced towards the desired activity.

The results suggest that a majority of the population of the UK are likely to be in the category of never having given cycling serious consideration. This is more so in certain types of

households, such as smaller ones, and those in a higher than average age group. There is no 'contemplation of change' amongst this majority. Promoting messages as if this pre-contemplation majority group were already ready for action would be largely worthless - the message would fall on deaf ears. For this majority there should be only one objective - to shift their outlook towards the contemplation of change.

This approach follows an example set by the UK Health Education Authority which identified that many smokers wishing to give up, are now caught at stages where they are 'ready for action' because of a lack of confidence in their own ability to sustain non-smoking. The current campaign is geared specifically at this obstacle. A decade or so ago, research indicated many smokers were at the stage of pre-contemplation or contemplation, and the focus of health promotion then was on the benefits of giving up in order to promote contemplation of change.

It might also be fruitless to promote behaviour change to the late majority/laggard groups as they are likely to remain in the pre-contemplation stage until there is some clear cultural norm to follow. Generating early change means identifying the innovator/early adapter market and specifically targeting this audience.

Relating Attitudes to Use

Thoughts and feelings are not always related to each other, nor do they necessarily guide our behaviour. It is perhaps more useful to think of attitude simply as a positive or negative evaluation of an object, expressed at some level of intensity using words such as like, dislike, love, hate, or admire etc. In fact the link between attitudes and behaviour is far from automatic. For example, an early concept was the 'knowledge-attitude-behaviour' (KAB) model, where it was assumed that knowledge (smoking damages your health) affects attitudes (believing smoking is a bad thing to do) and then behaviour (give up smoking). Behavioural psychology has exposed the simplistic inadequacy of this model, evidenced in the fact that most smokers believe smoking is bad for you and want to give up, yet continue smoking.

The conceptual framework presented here is thought to offer the best possible chance of defining this tenuous link between attitudes to cycling and the amount of cycling use, but it will never completely explain the variation in cycling use.

CONCLUSIONS

Behaviour change is a staged process, and assistance in creating staged behaviour change is most effective if based on a situational baseline, an understanding of the readiness of individuals to change, consideration of the balance of forces for and against change and a full understanding of a person's approach to innovative ideas.

The merits of such a conceptual framework are that it allows promotional campaigning effort, nationally and locally, to be more effectively targeted on specific population groups and associated relevant messages.

Although a highly complex process, early signs are that the conceptual framework developed by TRL will prove able to be validated and will add substantially to knowledge in this area.

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PSYCHOPATHS ON CYCLE PATHS ATTITUDES TO CYCLING AND HOW TO CHANGE THEM

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PSYCHOPATHS ON CYCLE PATHS ATTITUDES TO CYCLING AND HOW TO CHANGE THEM

With UK targets, set in 1996, of doubling cycling by 2002, and doubling it again by 2012 there is a need to understand more fully attitudes to cycling, reasons for mode choice and motivators for change, amongst regular, occasional and non-cyclists. This paper draws on research commissioned by the UK Department of Environment, Transport and the Regions and shows how attitudes can change over a very short period of time once people have been encouraged to try cycling and how this knowledge is being used in the development of a marketing strategy for cycling as part of the UK National Cycling Strategy.

PSYCHOPATHEN AUF RADWEGEN EINSTELLUNGEN GEGENÜBER DEM RADFAHREN UND WIE MAN SIE ÄNDERN KANN

Angeichts der Ziele, die sich Großbritannien 1996 gesteckt hat, nämlich einer Verdoppelung des Fahrradverkehrs bis 2002 und einer nochmaligen Verdoppelung bis 2012, ist ein besseres Verständnis der Einstellung gegenüber dem Radfahren, der Gründe für die Verkehrsmittelwahl und Motivationsfaktoren für eine Verhaltensänderung bei regelmäßigen und gelegentlichen Radfahrern sowie bei Nichtradfahrern erforderlich. Dieses Referat stützt sich auf Forschungsarbeiten, die vom britischen Ministerium für Umwelt, Verkehrswesen und die Regionen in Auftrag gegeben wurden, und zeigt auf, wie sich Einstellungen in einer sehr kurzen Zeitspanne ändern können, nachdem man die Menschen erst dazu bewegt hat, das Radfahren auszuprobieren, und wie dieses Wissen im Kontext der Entwicklung einer Marketingstrategie für das Radfahren als Teil der britischen National Cycling Strategy genutzt wird.

PSIHOPATI NA KOLESARSKIH STEZAH ODNOS DO KOLESARJENJA IN KAKO GA SPREMENITI

Leta 1996 si je Velika Britanija kot cilj zastavila podvojitev kolesarjenja do leta 2002 in njegovo ponovno podvojitev do leta 2012. Glede na to obstaja potreba po popolnejšem razumevanju odnosa do kolesarjenja, razlogov za obliko izbire in nagibov k spremembam in to med rednimi, priložnostnimi in ne-kolesarji. Prispevek je zasnovan na raziskavi, ki je bila opravljena s pooblastilom Oddelka za okolje, promet in regije Velike Britanije in kaže kako se lahko v zelo kratkem času spremenijo odnosi do kolesarjenja, ko ljudi enkrat opogumiš, da poskusijo kolo in kako je bilo to znanje uporabljeno v razvoju tržne strategije za kolesarjenje kot del Nacionalne kolesarske strategije Velike Britanije.

ENGLISH

DEUTSCH

SLOVENSKO

PSYCHOPATHS ON CYCLE PATHS ATTITUDES TO CYCLING AND HOW TO CHANGE THEM

INTRODUCTION

The UK National Cycling Strategy [DoT 1996] highlighted the potential of cycling to be a flexible, relatively cheap and environmentally friendly way to travel, with important health benefits for people of all ages. The strategy set headline targets of doubling cycle use by 2002 and doubling it again by 2012, based on 1996 figures. These targets are endorsed in the UK Government's recent Transport White Paper *A New Deal for Transport: Better for Everyone* [TSO 1998].

An individual's choice of transport mode is a complex decision. In addition to practical considerations such as price and convenience, it is influenced by many 'non-transport' factors. Identifying and understanding people's attitudes to cycling is therefore important to promoting cycling. This paper reports on research projects commissioned by the UK's Department of the Environment, Transport and the Regions (DETR) which study attitudes to cycling amongst cyclists and non-cyclists. The knowledge gained in the projects is helping in the development of a marketing plan for cycling as part of the UK National Cycling Strategy (NCS).

ATTITUDES TO CYCLING

Davies, Halliday, Mayes and Pocock [TRL 1997] used thirteen focus groups, in five areas, to explore people's attitudes to many aspects of cycling. They concentrated on identifying the types of people most likely to start cycling, or to increase their cycling, and the policies most likely to persuade them to do so.

The research found that most people tended to have positive memories of cycling during childhood but saw it as a minority activity for adults. Although existing cyclists cited many advantages and positive aspects of cycling, they also acknowledged disadvantages, particularly the unpleasantness of cycling in heavy traffic, danger from inconsiderate drivers and the risk of cycle theft. Non-cyclists were put off by indirect deterrents, notably the convenience of the car, and other demands on their leisure time; and by direct deterrents particularly the effort involved in cycling, the danger from motor traffic and cycling's poor image. In respect of this last point, the attitude of Government, employers and other 'authority' institutions was very influential in shaping the views of individuals.

Cycle use tends to change with life stages. The bicycle is used by children for exploring and trips with the family. It provides children with independent mobility, which they value. However, as they aspire to car-ownership and courtship, the bicycle becomes less 'cool' and less well used. The car replaces the bicycle for many young adults and cycling is seen as impractical for families with young children. However, once the children have their own bicycles, some adults will return to cycling for family activities. Other adults may return to cycling for practical reasons, such as cycling to work, especially if the family has no car or only one car. In later years 'empty-nesters' may also return to cycling, for leisure and health reasons or to 'rediscover' their youth. Understanding the impact of these life stages is important in relation to designing measures to encourage cycling.

In order to identify those types of cyclist most amenable to increasing their cycling, particularly for utility trips such as the journey to work (potential) cyclists were classified into five groups and located along two perpendicular axes representing attitudes to the car and leisure/work cycle use.

'Practical' cyclists are likely to be encouraged by financial incentives, time-saving measures and positive attitudes by employers. 'Idealist' cyclists respond to environmental arguments and restraints on car use, as well as practical measures such as improved safety and security. 'Fairweather' cyclists were only likely to respond to moderate leisure cycling initiatives. 'Life-style' cyclists were seen as wedded to car use for utility trips, unless the status of the bicycle could be raised nearer that of the car. 'Mainstay' cyclists - those who cycle owing to limited transport choice - were relatively insensitive to cycling initiatives. However, there is scope for increasing the amount of cycling for many in this last group and, more importantly, it is necessary to improve cycling conditions in order to retain these people as regular cyclists if and when their circumstances improve.

A deterrent common to all types of cyclist was the perception of danger from motor vehicles. Danger is undoubtedly the single most significant factor but Davies et al [TRL 1997] show that it is by no means the only deterrent, and that reducing danger will not, on its own, necessarily lead to more cycling. The majority of people see little personal need to consider cycling at all, particularly for utility trips. They have access to a car or public transport and have 'busy lives' that seem to preclude cycling. For non-cyclists, the decision to take up cycling is relative complex and they lack need or incentive. The report shows that attitudes to cycling are inextricably linked with attitudes to the car; viewed in

isolation, the bicycle has many positive attributes but, when compared with the car, it is seen less favourably. Some efforts were made to assess whether people thought that car restraint measures would lead to more cycling. Lower speed limits (20 mph) and better enforcement, and restrictions on car access to town centres, were seen as likely to encourage cycling. However, the impact of increased petrol prices, parking prices, and road pricing, were difficult to assess as driver respondents were reluctant to 'vote' for such measures.

Overall, attitudes to cycling were found to be varied, complex, linked to lifestyle and car culture, and sometimes contradictory. The results needed to be structured to enable policy makers to plan cycle-friendly measures and monitor their effectiveness. Comparisons were made with research into other 'social marketing' campaigns, particularly health promotion. Behavioural and motivational theory, and practical experience, were borrowed where appropriate. Three conceptual frameworks were proposed in order to help assess the current behaviour and motivation, and to monitor change:

Situational Baseline Status Grid. This shows the distribution of the population with regard to cycle ownership and cycle use for short trips. With the appropriate data, it will provide a cycling baseline and enable monitoring of levels of cycling activity in key areas such as the journey to and from work or school.

Model of Contemplation and Motivation to Change. This shows the five stages of propensity to cycle, 'pre-contemplation', 'contemplation', 'ready for action', 'action' and 'maintenance'. With suitable data, changes in the population's motivation towards cycling can be monitored.

Model of Social Innovation. This classifies people into five groups according to their predisposition to change, 'innovators', 'early adopters', 'early majority', 'late majority' and 'laggards'. Once again, with suitable data, changes in the population's motivation towards cycling can be monitored.

The qualitative study and conceptual frameworks should form a good basis for quantitative research, as well as underpinning future marketing efforts. Further work by the Transport Research Laboratory, on behalf of DETR, is underway in order to validate the conceptual categories and to collect the quantitative data. This work is due to be completed in early 2000.

NEW CYCLE OWNERS

Cyclists need to own, or at least have access to a bicycle. The attitudes study outlined above showed that a bicycle tends to be more of a personal item than a household item, whereas a car is more likely to be used by the household. A detailed longitudinal study by Davies and Hartley [TRL 1998] of 76 adult new cycle owners was undertaken, over a period of approximately three months, to identify their motivations and expectations when buying the bicycle and to compare these with their subsequent experience of cycling. Regular cyclists were excluded so that the sample comprised only new and returning cyclists.

Virtually all new cycle owners already had access to a car. The majority of them expected to use their cycle mainly for leisure although around one-quarter bought it mainly for commuting to work or education. Buying a cycle to ride with a partner or child was common: around 80% had partners who also cycled. Many had last cycled on a hire bicycle when on holiday. The majority of new cycle owners bought mountain bikes.

A travel diary was completed by the new cycle owners one month after purchase and they completed a detailed face-to-face interview after two months. The majority of owners reported cycling about once a week, some much more frequently. Those who had purchased the cycle mainly for leisure cycled less frequently than those who had purchased it mainly for commuting. About half had cycled less often than expected but around one-quarter had cycled more often.

Some found cycling better than they had expected whilst others found it worse. The main difficulties reported by the new cyclists were that they found cycling to be more effort than they expected and the danger and unpleasantness caused by motor traffic was also a strong negative factor. No one reported having a collision with a motor vehicle but some reported experiencing inconsiderate driver behaviour or a "near miss". Despite these problems, after two months, almost all were still pleased with their purchases. Those who had bought a cycle for commuting said that they now drove less (although it was not possible to verify this). One couple had sold their car in order to save money.

The survey gave a relatively positive impression of the experience of becoming a cyclist. It also suggested that some people can be encouraged to take up utility cycling "directly". However, as aggregate cycle use is not increasing with cycle ownership, it appears that as fast as some people are becoming cyclists others are cycling less. Whilst a range of measures is therefore needed to attract and support new cyclists, it is equally important to support existing cyclists to help prevent them from "lapsing". The research identified the need to improve conditions for cyclists and to make utility cycling more enjoyable through improvements to the cycling infrastructure, road safety improvements, and reductions in noise and emissions from motor vehicles. There should also be more advice on cycle accessories and maintenance, and support through provision of cycle routes and general encouragement to reinforce the cycling habit.

Not all new cycle owners completed all stages of the survey so the possibility of self-selection in the sample was also

investigated. Of the initial 76 respondents, 24 did not complete the full survey but the "dropouts" were similar to the "completes" in nearly all respects (age, sex, cost of cycle, etc.) except that they were less likely to have cycled in the previous two years and were less likely to be buying a cycle for commuting. This again suggests that it is important to encourage existing cyclists to continue cycling and that the motivation - or need - to cycle is stronger for utility cycling than leisure cycling.

DEVELOPMENT OF A MARKETING PLAN

There are over 20 million cycles in ownership in the UK today and around 2.25 million cycles are sold each year, of which 40% are for adult use. More bicycles are now sold than ever before but total cycle use continues to decline; from 6 billion to 4 billion kilometres cycled in the UK between 1982 and 1996. The aim must be to get people on their bikes particularly for short, utility journeys for which they might otherwise drive.

The NCS identified as a key output the need for a culture shift by changing of attitudes. Target audiences include potential cyclists and those in both public and private sectors responsible for providing transport systems. Targeting a marketing effort at potential cyclists is considered premature at this stage; there need to be improved conditions on the road and better facilities in place before the focus turns to this group. The UK's National Cycling Forum, through its Marketing Working Group, has therefore identified decision makers in both public and private sectors as the prime target audience at this stage. A Marketing Plan has been drawn up with an initial focus of targeting the NCS to this group. Once decision makers understand the NCS's rationale, purpose and targets, they will be better placed to ensure that the transport systems for which they are responsible properly integrate cycling with other modes as well as recognising its potential as a mode in its own right.

A growing number of local authorities have implemented cycling initiatives in the UK. Up to now there has been no central source of information available for others to access. A database of such initiatives would help to encourage further activity by providing others with information and examples about what, why and how such schemes have worked. The DETR has therefore commissioned consultants Oscar Faber to undertake a project to develop a local authority cycling initiatives database. This will provide existing information, data and case histories which demonstrate the success (and failure) of cycling-related initiatives and programmes and in the long term will assist in achieving the objectives of the marketing plan. This project is due to be completed in early summer 1999 and DETR are considering making the register available through a website.

CONCLUSIONS

The research shows that cycling in the UK is currently seen as a series of niche markets for the fit, sporty, radical, eccentric and even lawless. It does not evoke the image of an ordinary, everyday activity. Cyclists are considered inferior in status to the car driver with few people able to identify readily with them. Cyclists themselves have many often contradictory views of why they cycle. Although leisure cycling has an attractive image, utility cycling is often seen as dangerous and stressful owing to traffic conditions and driver behaviour.

The strategy for marketing the NCS will provide encouragement for decision makers to see cycling as a fundamental part of a sustainable and integrated transport policy that offers the opportunity to realise a range of wider benefits. This in turn is expected to lead to a greater commitment in terms of profile and resources for cycling and ultimately towards a situation where more people cycle more often.

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The views in this paper are not necessarily those of the Department of Environment Transport and the Regions, nor of any firms referred to in it. Any errors are solely the responsibility of the author.

THE BICYCLE IN THE ENVIRONMENTAL AGENDA OF THE COUNTRIES OF THE SOUTH AT THE END OF THE XX CENTURY.

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THE BICYCLE IN THE ENVIRONMENTAL AGENDA OF THE COUNTRIES OF THE SOUTH AT THE END OF THE XX CENTURY.

Bicycle symbolises an opportunity for human culture, a new civilisation. It is certainly the most noble mechanical metaphor of the human spirit. Our loyalty to this metaphor should lead us to get the democratic and sustainable city.

This paper analyses how the use of bicycle is a social, environmental and economic imperative for the cities of the South. The massive use of bicycle can contribute effectively to caring for the environment, reducing pollution, calming traffic and combating poverty.

The author will reviewed several actions of the campaign BIKE IS BEST conducted since 1994 in Cali particularly, massive bike demonstrations, the advocacy for the rights of cyclists, and proceedings of the International Symposium The Sustainable City and the Bicycle held in November, 1998.

ENGLISH

DAS FAHRRAD IN DER UMWELTAGENDA DER SÜDLICHEN LÄNDER AM ENDE DES XX. JAHRHUNDERTS

Das Fahrrad symbolisiert eine Chance für die menschliche Kultur, für eine neue Zivilisation. Es ist mit Bestimmtheit die nobelste aller mechanischen Metaphern für den menschlichen Geist. Unsere Loyalität dieser Metapher gegenüber sollte uns zur Erreichung der demokratischen und nachhaltigen Stadt führen.

Dieses Referat analysiert, inwieweit der Gebrauch des Fahrrads für die Städte des Südens vom sozialen und wirtschaftlichen Standpunkt sowie aus der Perspektive des Umweltschutzes ein Muß ist. Der massive Gebrauch des Fahrrads kann effizient zum Schutz der Umwelt beitragen, die Verschmutzung reduzieren, den Verkehr beruhigen und die Armut bekämpfen.

Der Autor wird verschiedene seit 1994 in Cali im Rahmen der Kampagne BIKE IS BEST durchgeführte Aktionen präsentieren, insbesondere massive Demonstrationen für den Fahrradverkehr und den Kampf für die Rechte der Radfahrer, und auf die Dokumentation des internationalen Symposiums „The Sustainable City and the Bicycle“ im November 1998 eingehen.

DEUTSCH

KOLO V OKOLJSKI AGENDI JUŽNIH DEŽEL OB KONCU 20. STOLETJA

Kolo predstavlja priložnost za človeško kulturo, za novo civilizacijo. Kolo je gotovo najbolj plemenita mehanična metafora človeškega duha. Naša lojalnost tej metafori naj nas vodi k demokratičnemu in trajnostnemu mestnemu razvoju.

Ta prispevek analizira vprašanje, kako je kolo socialno, okoliško in ekonomsko nujno za mesta na jugu. Masivna raba koles lahko učinkovito prispeva k skrbi za okolje, znižanju onesnaževanja, mirnejšemu prometu ter boju proti revščini.

Avtor bo opisal in revidiral nekatere akcije kampanje KOLO JE NAJBOLJŠE, ki poteka od leta 1994 posebej v Caliju, masivne kolesarske demonstracije, zagovor pravic kolesarjev in zapisnike mednarodnega simpozija Znosno mesto in kolo, ki se je odvijal novembra 1998.

SLOVENSKO

PLANNING FOR SLOW MOVING VEHICLES IN GROWING METROPOLIS

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ENGLISH

PLANNING FOR SLOW MOVING VEHICLES IN GROWING METROPOLIS

Out of the total vehicles of 794147, the share of S.M.V is 41.5%. The total transport system of Ludhiana is oriented towards fast moving vehicles and the contribution of slow moving vehicles is never recognised.

Out of the total accidents on the roads 65% involved Bicycles and Rickshaws. Further by the year 2001 there will be 1.3 million vehicles in Ludhiana and share of slow moving vehicles will be 0.5 million. The challenge is not only to provide tracks for bicycles, rather changing the policies of development and expansion of the metropolis. There is immediate need to create some finances / community funds for encouragement of cycles, restrict the size of residential communities, decentralise some city functions, provide public transport systems and encouraging bicycles in higher income groups.

DEUTSCH

PLANUNG FÜR LANGSAME VERKEHRSMITTEL IN WACHSENDEN METROPOLEN

Der Anteil der langsamen Fahrzeuge an den insgesamt 794147 Fahrzeugen beträgt 41,5 %. Das gesamte Verkehrssystem von Ludhiana orientiert sich an den schnellen Fahrzeugen, und der Beitrag der langsamen Fahrzeuge wird nicht anerkannt.

An 65% aller Unfälle, die sich auf den Straßen ereigneten, waren Fahrräder und Rikschas beteiligt. Bis zum Jahr 2001 wird es in Ludhiana 1,3 Millionen Fahrzeuge geben, und der Anteil der langsamen Fahrzeuge wird sich auf 0,5 Millionen belaufen. Die Herausforderung besteht nicht nur in der Schaffung von Radwegen, sondern eher darin, eine Änderung der Entwicklungs- und Erweiterungspolitik der Metropolen herbeizuführen. Es besteht eine unmittelbare Notwendigkeit, Finanzierungsquellen / öffentliche Gelder für eine Förderung des Fahrradverkehrs verfügbar zu machen, die Größe der Wohnbezirke zu reduzieren, einige städtische Funktionen zu dezentralisieren, öffentliche Verkehrssysteme zu schaffen und auch Gruppen mit höherem Einkommen zum Gebrauch des Fahrrads zu ermutigen.

SLOVENSKO

NAČRTOVANJE ZA POČASNA PREVOZNA SREDSTVA V NARAŠČAJOČIH METROPOLAH

Delež počasnih prevoznih sredstev med skupno 794147 vozili je 41,5%. Celoten transportni sistem Ludhiane je usmerjen k hitro vozečim prevoznim sredstvom in delež počasnih prevoznih sredstev ni priznan.

V 65% vseh nesreč na cestah so vpletena kolesa in rikše. Do leta 2001 bo v Ludhiani 1.3 milijone vozil in delež počasnih prevoznih sredstev bo znašal 0.5 milijona. Naš izziv ni priskrbiti kolesarske steze, temveč spremeniti politiko razvoja in širjenja metropole. Obstaja takojšnja potreba po ustanovitvi finančnega oz. občinskega sklada za spodbujanje kolesarjenja, za omejitev velikosti stanovanjskih skupnosti, za decentralizacijo nekaterih mestnih uradov, za priskrbljenje javnih prevoznih sistemov in spodbujanje kolesarjenja v skupinah ljudi z višjim dohodkom.

FRIDAY

PLANNING FOR SLOW MOVING VEHICLES IN A GROWING METROPOLIS

1. INTRODUCTION:

The outstanding feature of urbanisation trends all over the world are increase in urban population and areas influenced by cities. In developing countries the change is taking place at a rapid rate that planners and decision makers find it difficult to cope with development. The decision about urban land are made by number of private owners, developers and individuals according to their own future profits. Further the restrictive town planning regulations making it difficult to suggest new and possible remedial measures.

The total population of the country has increased from 283.39 million in 1901 to 844.49 million in 1991. But urban population has increased from 25 million (10.84%) in 1901 to 217.17 million (25.72%) in 1991. The present urban share of 25.72% is likely to be extended to 45% by the year 2025. This fast growing unplanned urbanisation in India is dominated by few cities where 23 metropolitan cities are sharing 32.8% of urban Population. In the light of this concentration of people there are problems of traffic delays, congestion, insufficient parking areas and increase in accidents. To meet the increasing travel demand of urban areas, public resources and growing environment pollution, it is important to recognise the bicycles and cycle Rickshaws as a complement transportation system. The affects of the deterioration of urban surroundings on the Slow Moving Vehicles has passed unnoticed.

This presentation is based upon the studies conducted on a fast growing Indian metropolitan city of Ludhiana

2. CHARACTERISTICS OF SLOW MOVING VEHICLES:

The non motorised Slow Moving Vehicles and motorised vehicles are incompatible by nature. In a developing country like India the Slow Moving Vehicles like cycle-rickshaws, bicycles, animal carts and hand cart are used for goods transportation in central areas and also in residential neighbourhoods. They needs different norms & standard and varying functional requirements. In the developing countries the forcefully transport system has been emerged in the urban fabric and the question of safety and smooth movement of cyclists come in to force.

Slow Moving Vehicles widely vary in character in terms of its shape, use, size and dimensions. In an Indian town 28 different slow moving modes have been identified. These can be grouped into six categories as bicyclists. Cycle rickshaws for goods and people, hand and animal carts. These varieties are due to non standardisation and lack of control production of vehicles. Generally Slow Moving Vehicles users have less traffic awareness, lack of skill and experience in the driving the vehicles. They are less attentive to traffic situation and , impatience and negligence attitude towards traffic rules. Due to long distances of travel are involved much fatigue is caused that affect their efficiency to handle the vehicles. The cyclist has the tendency to waive through the fast moving vehicles that often leads to accidents.

3. GROWTH PROFILE OF THE METROPOLIS AND THE CYCLISTS:

The state of Punjab is one of the richest state of the country has highest per capita income. Out of 120 cities and towns of the state Ludhiana tops the list with 1,012,062 people and accordingly becomes the first city of the state to cross the one million mark. It is the 23rd metropolitan city of the India and had 3rd highest growth rate of 66.72% among metropolitan cities. The importance of the metropolis can be realised from the fact that it alone house 1/6th of the urban population of the state.

The metropolitan city of Ludhiana has a municipal area of 88.48 Sq km. It has a low lying areas of river Satluj in the north, North west direction and surrounded with rich agricultural plains in the south direction. Its central location in the state of Punjab has helped it to attain the status of major regional trade & commerce centre, an important industrial centre of the state and a seat of higher education in agriculture, engineering and medical sciences. During past three decades it has emerged as a major node in the traffic scenario of the country.

During last three decades (1971 onwards) the city's population has been changed from 401 176 to 1 012 062. There is an increase of 5 % per year. It is because of the rich agricultural economy of the state and large scale industrial expansion in the city. The area under industrial uses was 8.18% in 1971 increased to 23.41 % in 1992 of the total built up area. But the share of area under roads has been reduced from 12.67% in 1971 to 7.86% in 1992, quite below the prescribed the standards. As a result, the frequent traffic jams, congestion, delays and high level of air and noise pollution has become a common feature of the metropolis.

S. NO .	Land Uses	Areas in Sq Km 1992	Areas in Sq Km 1971	Areas in Sq Km 1985
1.	Residential	13.88 (44.89)	35.92 (57.66)	48.63 (44.89)
2.	Commercial	0.74 (2.42)	1.67 (2.67)	3.16 (3.57)
3.	Industrial	2.53 (8.18)	8.96 (14.38)	20.72 (23.41)
4.	Recreation	1.03 (3.33)	0.19 (0.31)	0.43 (0.48)
5..	Traffic & Transportation	3.90 (12.67)	6.56 (10.60)	6.95 (7.86)
6.	Government	2.31 (7.46)	2.15 (3.46)	2.47 (2.79)
7.	Public & Semi public	6.52 (21.10)	6.76 (10.86)	6.12 (6.92)
8.	Total developed area	30.91	62.21	88.48

Table #1:
Changing Land Uses in
the metropolis

Source: The master Plan of Ludhiana, The Punjab Town & Country Planning Department
(All figures in the parenthesis are the Percentages share of land uses.)

The change to industrial economy has further accelerated the vehicle ownership in the city. But this was limited to a very small part of the society. The two wheelers and cars have an annual increase of 10.95% and 11.63%. Despite such changes the growth of Slow Moving Vehicles is still 18.49%. More and more vehicles are coming on the roads but there are no space to accommodate them. In Ludhiana Slow Moving Vehicles shares 41.5% of the total vehicles and are performing 58% of the daily trips. But the misery of the system is that total transport system is oriented towards fast moving vehicles. These traffic problems and increasing accidents had already caught the public attention but the deterioration of the slow moving vehicles has passed unnoticed. The silent part played by the cyclist is mostly taken for granted. The share of burden of total trips performed by Slow Moving Vehicles especially cyclist is never recognised.

The phenomenon of pull towards the metropolis and movement growth process coupled with migratory process has led to urban sprawl bursting in their lengths and breadth. The city is expanding along all the available dimension and stressing urban land and other available infrastructure. The penalty of this development is that human activities are concentrated at one place and has disturbed the existing transport system of the city. The Ludhiana city shares 20.41 % of the total vehicles of the state. By the turn of the century there will be 1 334 000 vehicles on the roads of the metropolis, out of this there would be 550 000 will be Slow Moving Vehicles but there would not be any space to move on the roads. This eco-friendly mode is not going to die as the present annual growth of Slow Moving Vehicles is highest in the city. There fore for efficient functioning of the metropolis emphasis should be given to the Planing for slow moving vehicles.

Type of vehicles/Year	1995-96	1996-97	1997-98
<i>Slow Moving Vehicles</i>			
Cycle Rickshaws	20423	23150	24037
cycles	210000	250000	300000
carts	4558	4621	5095
<u>Total</u>	<u>234981 (38.65)</u>	<u>277771 (39.69)</u>	<u>329132 (41.45)</u>
Growth Rate		18.20%	18.49%
<i>Fast moving Vehicles</i>			
2 wheelers	330512	373220	411087
4 wheelers	42277	49003	53928
<u>Total</u>	<u>373089 (61.35)</u>	<u>422223 (60.31)</u>	<u>465015 (58.55)</u>
Growth Rate		13.6%	10.13%
Grand Total	608070	699994	794147

Source: The Municipal Corporation, Ludhiana, The District Transport Office Ludhiana
(All figures in the parenthesis are the Percentages share of vehicles.)

Table #2:
Growth of different types
of vehicles

Out of the total daily trips performed the share of cycle and walk is highest. Walking is a common feature to commercial and cultural activities. Among vehicles the trip mode is dominated by cycles. This is because of compact development of the metropolis. But as the size of city is likely to expand in near future, the role of cyclist can not be ignored in the

planning process. Also it is further observed that the 88% trips are work based trips.

4.

S. No.	Mode of travel	No of Trips	Percentage Share
1.	Bicycles	521911	39.43
2.	Cycle rickshaws	230000	17.36
3.	Animal Cart	100	0.0075
4.	Two Wheelers	100000	7.5
5.	Cars	26000	1.96
6.	Auto Rickshaws	34000	2.57
7.	Taxi (Cars)	174	0.013
8.	Walk	400888	30.31
9.	Total	1322799	100

Table #3:
Share of trips by different modes

Source: Report on "Traffic Studies for Ludhiana Metropolis" ORG,
Rail India Technical Economic Surveys, New Delhi.(India)

CYCLIST BEHAVIOUR ON ROADS:

The city growing in a peculiar fashion where growth is taking place along major radial routes. The radial expansion is most suitable for our modern means of transportation. The decisions regarding urban activities are based upon the availability of better accessibility. Generally peripheral road sides are more attractive for setting up of industrial and commercial enterprises. Different commercial activities, repair shops, workshops, petrol stations, without strict vigilance and control find it convenient to spring up along highways. The city has the ring radial pattern of the roads. The radial roads are the major regional roads effecting the development of the city. The major arterial road in North and North East direction is the National Highway 1(NH1) and two State Highways in the South and South Western direction. These roads enable the traffic to enter and leave the city The NH1 is connecting the central old commercial areas and industrial areas of the city. Also industries have been expanded along the ring roads in the Eastern direction The south and south west roads are connecting administrative and institutional areas.

The traffic behaviour on arterial road is different in the inner city areas and in the outer areas. The share of Slow Moving Vehicles is 25% in the outer areas and 30 - 40 % in the inner parts. The traffic volume share in the outer parts is less as compared to inner parts of the city. As there are no outer ring roads / highways to pass the regional traffic as a result the cyclist from the surrounding rural areas has to move along the heavy buses and Industrial traffic. Although there share is 20-22% on outer roads yet there are no separate lanes for their movement. These vehicles are crushed by fast moving heavy vehicles especially during night times. The majority of the trips generating using cycles are from the inner city areas. The cyclist has to move along with cars and two wheel motorised vehicles. It is the economical mode of transportation also the trip length of 5.8 km is suitable for the cyclist. It is very

Table #4:Traffic Volume Modal Split

S. No	Road	Light Fast vehicles	Heavy fast vehicles	Total FMV	Bicycles	Cycle rickshaws	Carts	Total Slow Moving Vehicles
Outer Roads								
1.	R1 Ring Road in the NE direction	41.96	37.72	79.68	14.12	5.98	0.22	20.32
2.	R2 National Highway 1	51.61	37.34	88.95	9.33	1.61	0.11	11.05
3.	R3 NH1 passing through Ind. areas	46.16	31.46	87.62	10.37	1.89	0.12	12.38
4.	R4 State Highway in the W passing through Institutional areas	50.06	20.55	70.61	25.80	2.71	0.88	29.39
5.	R5 State highway to state capital	48.98	25.03	74.01	23.4	1.98	0.61	25.99
Inner Roads								
6.	R6 Road in the Industrial areas	33.32	9.89	43.21	31.72	13.92	0.61	56.79
7.	R7 NH1 the NE	42.58	12.3	54.89	30.45	14.34	0.16	45.11
8.	R8 Road to commercial areas	47.12	0.00	47.12	32.40	16.05	2.01	52.88
9.	R9 SH in the W	43.40	60.36	22.18	28.44	5.48	2.02	29.39
10.	R10 SH to state capital	40.96	12.01	53.06	40.72	6.23	0	46.94

Source: Report on "Traffic Studies for Ludhiana Metropolis" ORG, Rail India Technical Economic Surveys, New Delhi.(India)

difficult for the safe and smooth movement of the vehicles, the road side encroachment, high volume of traffic and absence of signals at cross section make their movement impossible.

The presence of Slow Moving Vehicles on roads is seen as an obstruction to the motorised traffic, the running speed is reduced and city has all kinds of traffic pollution on the roads.

The cyclist are taking a major load of the road traffic but there is no infrastructure support to it. The situation is very unsafe at junctions and railway crossings, where cyclist has to make their own way and often involved in some accidents.

5. CYCLIST IN THE WORK AREAS:

The metropolis is broadly divided into three main work areas as central old commercial area, industrial area and institutional areas scattered mostly in the western side of the city. These are connected with ring radial pattern of roads and surrounded by many planned and unplanned residential areas. The Ludhiana city has efficient road / rail and air link with national / state capitals and all other important settlements in the surrounding areas. The traffic behaviour on the radial and other roads have been studied and the problems faced by slow moving vehicles especially bicycles are highlighted in this presentation.

5.1 Central Commercial areas:

The central old area is the main attraction for the national and regional level commercial activities. The narrow zig-zag roads along high rise buildings, suitable for bicycles had been invaded by modern high speed automobiles. Due to concentration of commercial activities the large scale structural transformation has occurred in the central area. The conversion of residential to commercial uses has deteriorated the transport system in the central areas. The flexibility of use and easy door to door service of cycle-Rickshaws and bicycles had made them popular, but expansion of whole sale markets demands use of large size motorised vehicles. So the slow moving vehicles are forced to move along high speed motorised vehicles. The absence of any traffic regulation and heterogeneous of traffic make it unsuitable for the movement of cyclists.

There are no proper parking areas to support it, the open spaces around public buildings have been encroached by parking areas where there is no room for cyclists. The vehicles are also parked in front of the shops along the sides of the road that disturbed the movement of the slow moving vehicles. The cyclist are forced to move along motorised vehicles causing fatal accidents.

5.2 Industrial areas

The metropolis of Ludhiana is the one of the leading industrial centre of the country. It has 65 % of the hosiery industry and 45% share of bicycle industry of the country. There are two planned industrial areas in the city besides this there are many unauthorised and illegal industrial pockets scattered in the different parts of the city. These industries has been developed mainly along the National Highway (NH1) and expanded beyond the Municipal Boundaries. These areas are surrounded by large scale unauthorised residential and commercial activities. These are the major generating points for the cyclists. The bicycles is the common mode of travel to the industrial area. The share of Slow Moving Vehicles on a major road (Grand Trunk Road) passing through the industrial areas is as high as 56 %. Out of this 40% are cyclist.

So for the cycle is consider as the most common and easily affordable mode of travel. Industrial workers are living in the poor housing areas and forced to move along the high speed traffic. There were some efforts to planned the residential areas but the use of cyclist has been ignored. The absence of suitable transport system made bicycle as the common mode of travel to work areas. But there is no space for movement of the cycles. The cyclist are forced to move along high speed industrial traffic and often involved in fatal accidents. There is sufficient space available for the expansion of the roads, but he role of cyclist is never recognised and so for no policy has been framed for encouragement of the cyclist on the roads.

5.3 Institutional areas:

The western and southern side of the city has many public, private administrative and educational institutes. The areas attract people from all parts of the city and even from surrounding areas. A large no of planned residential areas have been developed in the close proximity of these areas. These areas have been developed along a state highway. The roads in the morning has school and college going students who predominately use cycles as their common mode of travel. The percentage share of bicycle traffic is 29% on the roads. In the ring radial pattern of roads the ring roads in the western sides are missing as a result regional traffic leading city central and industrial areas in the east has to pass through this

road. The major arterial road in the western direction connecting different institutional and residential areas is not a safe route for cyclists. Even the sub arterial and collector roads in the residential areas have many unsafe junctions as the concentration of vehicles is the highest in the planned residential areas.

6. ISSUES AND STRATEGIES FOR CYCLISTS:

The major challenge to cyclist on Indian roads is the provision of safe and smooth movement along with the high speed motorised vehicles. The heterogeneous nature of traffic is unavoidable in the growing metropolitan cities. The constraints of public resources, lack of development controls encourages the mix land use character in the cities. Also the availability of better accessibility along radial routes and absence of an efficient public transport system accelerate the linear development of the cities.

The road side development affects the movement of cyclist on roads. Generally the arterial roads have commercial activities along the sides. The laying of power lines and telephone lines have become a common features that obstruct the road side movement of the cyclists. The adjoining activities have on street parking owing to the increased vehicles ownership there by further congesting the available space for the movement of the cyclists. Unauthorised encroachment on the sides of the roads further obstruct the movement. The cyclist have been using the left lane of the main carriage way. This has resulted in the reduction in the efficiency of the transport system of the city. As a result a negative attitudes developed towards cyclist and these are considered as a major obstruction to the free flow of the traffic.

There is an immediate need to orient the policies and to generate a public good-will in favour of cyclists. The radial roads should have the provision of fully segregated cycle tracks integrated with the cross sections. Also development along road side should be ensured after providing sufficient parking areas and service roads. The provision of cycle tracks is considered as an extra burden on the already deficit financial resources. There is need to change the priorities of the public policies in favour of cyclists. It can be realised that the provision of cycle tracks would help to ease the movement of motorised traffic on the main roads.

The existing road network of Ludhiana city is of ring radial pattern. There are two series of ring roads connecting different arterial radial routes. All the inner rings are suitable for movement of cyclist. Also there is outer ring road only in the north eastern direction. The regional traffic from other direction is bound to pass through the city. Out of the total traffic volume there is 19 % more traffic is the through and it travels extra 5 to 6 km distances. This pose unnecessary burden on the roads and cause congestion. The small space left on the sides of the roads is taken by the motorised vehicles. By completing the missing links between different roads the safe smooth and healthy passages for cyclist can be developed. There is need to restructuring of the route network and the interaction between land use and transportation to be appreciated.

The bicycles are predominately used by the School going children and the economically weaker section of the society. The highest trip generations are from low income residential areas scattered around different work areas. Due to the linear expansion of the city the trip length has been increased that raised the fatigue level and discourage the users. The increased motorised traffic combined with heterogeneous character of traffic led to the fatal accidents. The public transport system should support the cyclists movement on inner roads so that an efficient and better functional environment can be achieved in the same prescribed resources. Also there is emergent need to popularise the cycles among the higher income group people so that better health and safety standards are achieved.

So for the cyclists are waiving through the congested traffic routes. The growing number of two wheelers is a major threat to the provision of cycle tracks. The separate traffic regulations, use of stone cobbled paths at intersections and use of other control devices need to be implemented along the cycle tracks. Such a provision would act as a speed breaker for the motorised transport.

With the rapid increase of motorised vehicles rotaries have become non functional and fatal accidents have occurred involving cyclist. Certain planning efforts done to smooth the traffic at

junctions but the role of cyclist is ignored. At intersections cycle tracks be made with red asphalt so that they stand out and demarcated separately Provision of cycle parking lots at bus & rail terminals for people to use the public transport and avoid the use of cycles for long distance movement. There should be required number of repair shops, proper lighting facilities delicious tress and rest areas.

An appropriate institutional arrangements for the comprehensive, co-ordinated and continuous planning, development, are possible. For this a proper information system, data bank regarding the use of cyclists, norms and standards suitable to Indian conditions must be framed. Involvement of private sector in the infrastructure laying process should be encouraged.

There is a need to make the Slow Moving Vehicles users aware about the traffic regulations and proper sign conventions. Also standardisation of Slow Moving Vehicles and restricting their movement in certain areas will help to change the attitude towards cyclists.

7. CONCLUSIONS:

The popularity and growth of motorised vehicles have stressed the existence of cycles on the roads. But this non polluting,

non motorised and healthy vehicle is providing a supplementary transport system in the cities. Even under the impact of changing technologies and life styles, the cycles are not going to loose their role rather providing an alternative transport system. The success of any public transport system depends on the efficiency and functional use of slow moving vehicles. There is need to plan and orient the policies and to generate a public good-will in favour of cyclists.