Concepts of urban planning to secure and promote bicycle usage

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Ladies and Gentlemen,

The subject of my presentation are concepts of urban planning, the role of the bicycle in urban traffic and concepts which reflects the needs of the cyclists, concepts which are integrated in sustainable settlements development

1. Introduction

I would like to tell you something about the necessity of an integrated planning approach strategies in planning and implementing actions for the promotion of bicycle usage, strategies which incorporates apart from the cyclists themselves all other areas of the „green modes“, including pedestrians and urban public transport. In other words, the integration of bicycle transportation planning into the overall city traffic planning scheme. As an ecological, space-saving and at the same time healthy means of transport, the bicycle is also able to contribute significantly to reduce the inner city traffic volume and thus provide better livability in our cities.

The bicycle is essential for large parts of the population, mainly pupils, students and women. The bycicle plays a considerable role in many Third World cities. In these environments, bicycles - both for personal transportation and for goods - could be and often are used on a large scale. In most cases, however, bicycles seem hitherto almost to have been left out of the planning considerations.

2. Development of urban structure

I would like to point how urban development and transportation planning policy has evolved over the last forty years to the benefit of private car traffic and to the disbenefit of pedestrians, cyclists and riders of public transportation .

Because of the increasingly auto-oriented transportation and development policies, it is getting more difficult to reach locations important in daily life. Longer journeys and centralization of the supply and service sector are the result. Home, work, shopping, leisure etc. are increasingly isolated. The dying-out of the local corner grocery store in city neighborhoods is the consequence of a settlement pattern which requires the use of private cars.
The diagramm demonstrates the ancient town: the town of the short journeys and you can compare it with the so-called physically compact town nowadays – and the present town with long journeys or dispersive settlement structures.

Parallel to settlement development, traffic and transportation also changed: Traffic and transportation policies of the last decades favoured covering long distances at high speed, while the car was much more promoted than other means of transportation. The principle of 'faster and farther' has been consistently realized in urban public transport. As a result the opportunities for organizing life are highly dependent on the settlement structure. The city development and the urban transportation has ignored the interests of the `weak´ traffic participants, mainly cyclists and pedestrians.

3. The role of the bycicle as a mode of transport

The bicycle plays an important role in urban traffic. Like trips by car, bicycle trips are relatively short. 58% of all the trips are shorter than 3 km. A bicycle trip in Germany covers an average distance of nearly 3 km and takes about 17 minutes.

- 70% of all trips do not exceed 3 km.
- Nearly 70% happen within a quarter of an hour.
- Nearly 90% are finished within half an hour.

In urban traffic the bicycle is a comparatively fast means of transport. This sheet shows the travel time in minutes for different means of transport (walking, bus and train, car and bicycle). As you can see, up to a distance of 4 km the bicycle is faster than the car in town, the time for searching a convenient parking space being of course added.

	Lenght in km	Duration in minutes
Average	**2.82**	**16.8**
Standard Deviation	**3.40**	**22.6**
Median	**2.00**	**10.0**

figure 2: lenght of bicycle trips

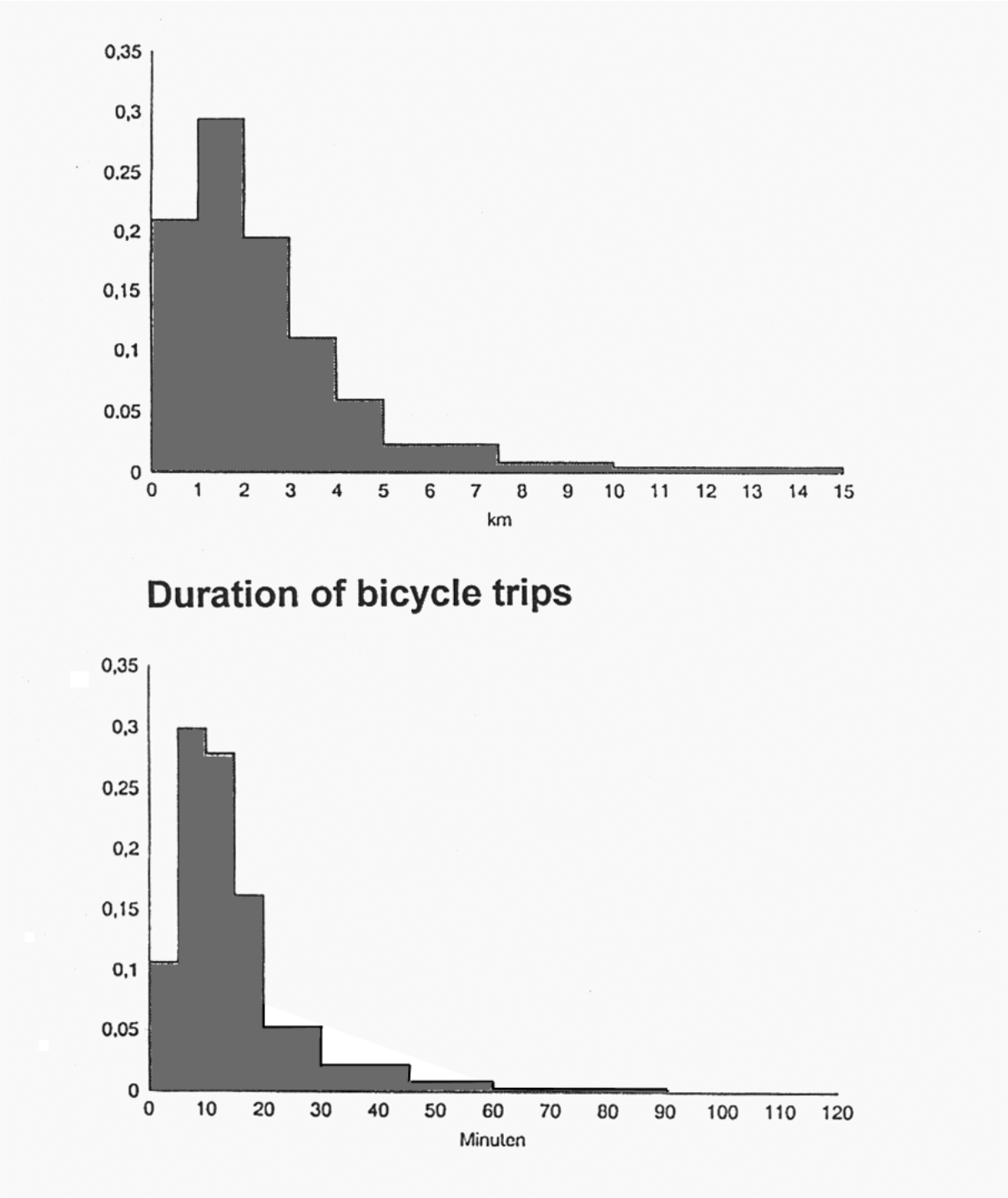

figure 3: duration of bicycle trips

So, since we are talking about strategies to promote bicycle usage, this sheet is quite helpful, but also the next one.

It gives an idea of the potential resources which could be made available for bicycle transportation. The figures are based on travel surveys and counts conducted in Berlin.

- For any distance up to 2 km (that is a proportion of 35% of all trips on an ordinary working day), in this distance 100% may be covered by bike.
- The same is true for distances up to 5 km (these are the distances in physically compact towns).
- For distances between 5 to 10 km, these are still 30%, and above that still 15%.

These estimates were confirmed by surveys conducted in the Netherlands.

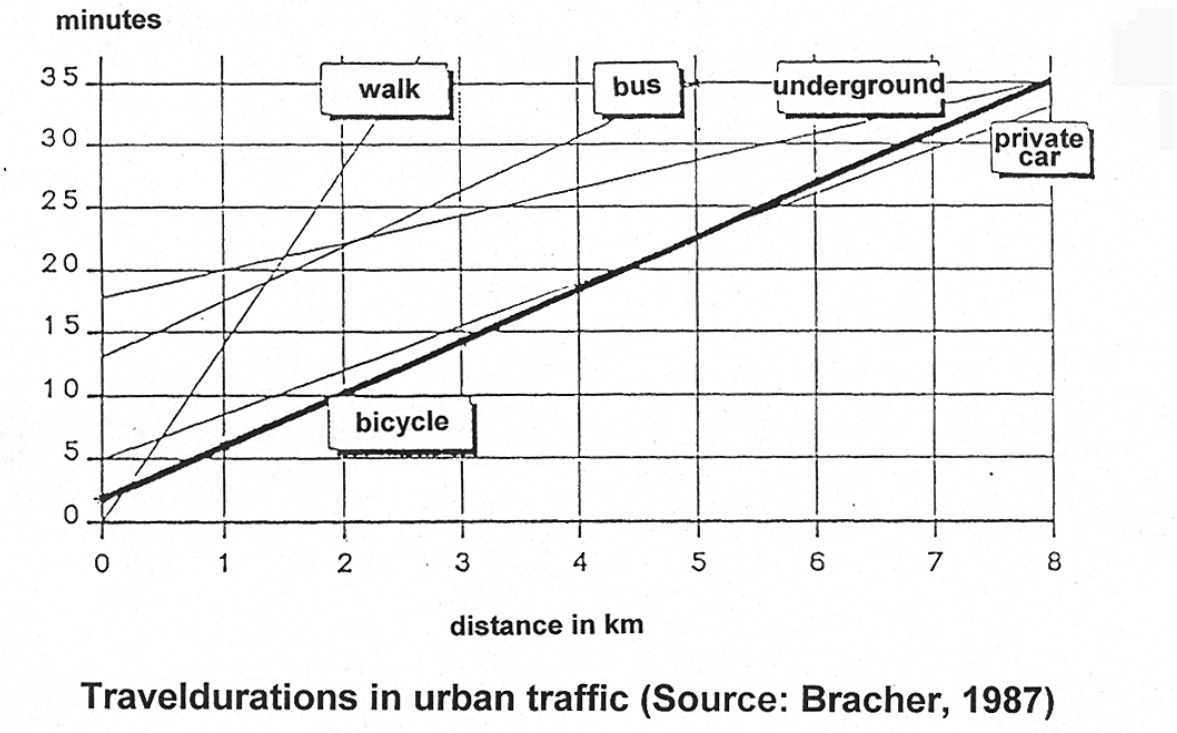

figure 4: travel durations in urban traffic

Distance-range	Percentage of all trips on week-days*	Percentage of changeable trips
up to 2 km	35%	100% of all public trips
up to 5 km (20 minutes by bike)	59%	100% of all public trips
5 to 10 km		30 % of all public trips
10 to 15 km		15 % of all public trips
*Complete public trips, except the necesarily motorized traffic like cabs and deliveries and the portion of urban public traffic.		

figure 5: chance for bicycle traffic

4. Planning principles

If we sum it up: the bicycle is an important and sustainable mode of transport in our towns. But was has to be done to improve the situation? The following planning principles suggest how needs of cyclists should be taken into consideration in urban and transport planning.

Planning principles

1. Compact and mixed land use (residence – work – recreation)
2. Priorities for environmentally protective transportation modes (green modes)
3. attractive cycle network
4. public participation

1. Compact and mixed land use

Urban settlement features integration of residence, shopping, work place, and so on should be performented to achieve short daily trips. Town and regional planning should be based on proximity and accessibility to keep distances within bicycle range. That means several small centres and we achieve the city of the short secure journeys (see figure 6)

TOMORROW
CITY OF THE SHORT SECURE JOURNEYS

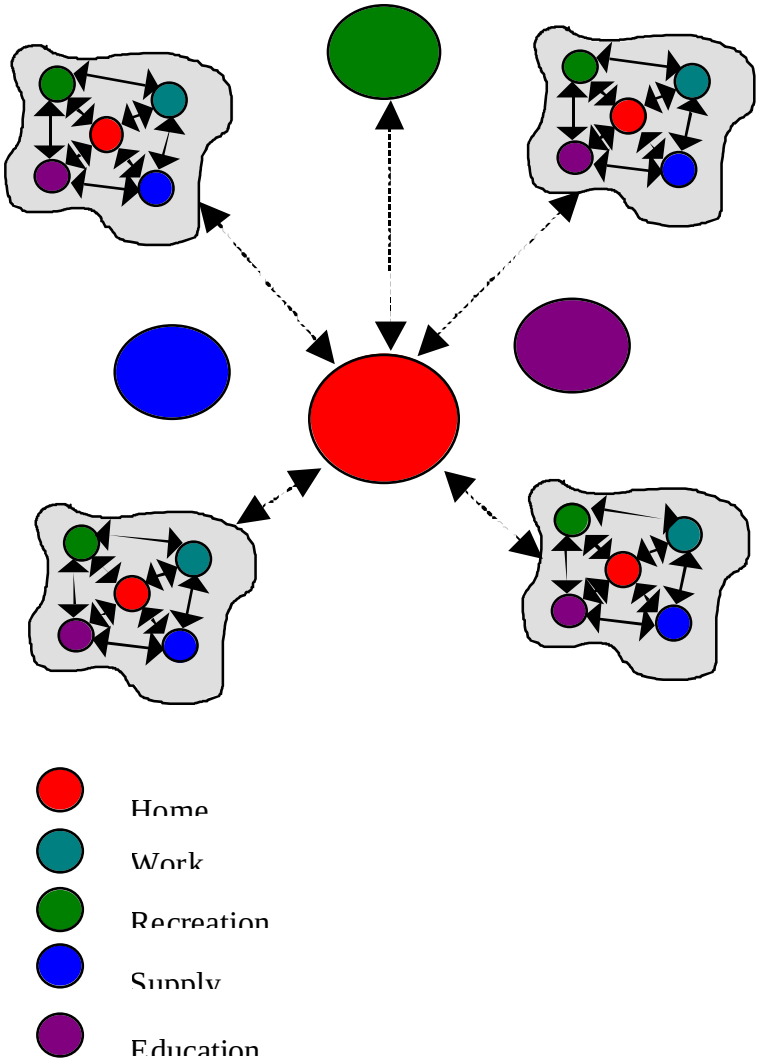

figure 6: city of the short secure journeys

2. priorities for environmentally protective transportation modes

That means improvement of public urban traffic, but also bike &ride and parking facilities

The third important principle is attractive and safe cycle (and pedestrian) network and last: Continual inclusion in planning processes, which means public participation, participation of pressure groups, politicans, inhabitants, several user groups, participation from the beginning.

5. Cycle network

Let me spend some ideas about the third point, the cycle network planning, the necessity of providing continuous and attractive routes for cyclists.
First and that is very important: the planning of bicycle networks and connection routes has to be integrated into the overall urban planning schemes. They must become part and parcel of the urban and traffic development plans. I am referring to a traffic development plan which considers these means of transport in an integrated fashion and promotes all „green modes“ (walking, bicycle and public transport).

Like the car traffic, bicycle transportation also needs a network of roads and paths which is staggered from top to bottom. It is important to provide a dense network without any gaps that is composed of quick and safe connection routes. .A complete bicycle network should cover the whole city and should fulfill the criterions of attraction and social security.

With the design of such bicycle network concepts, this idea is gradually gaining ground in Germany. The Netherlands are very successful in this since many years. These networks are staggered from top to bottom and consist of primary and secondary routes which constitute the basic network or neighborhood connection routes (see figure 7)

- Primary routes connect key departure points and destinations within a given urban area. These are high-standard fast connection routes. They pass through the whole town and are usually provided with signposts.
  A particular type is the so-called „veloroute“. These are primary routes designed as as bicycle boulevards away from major roads and leading through parks and large bicycle paths. These cycle routes should not lead through uninhabited or monofunctional areas like industrial areas. These areas are only lively during certain hours. –important mainly for women (social safety).

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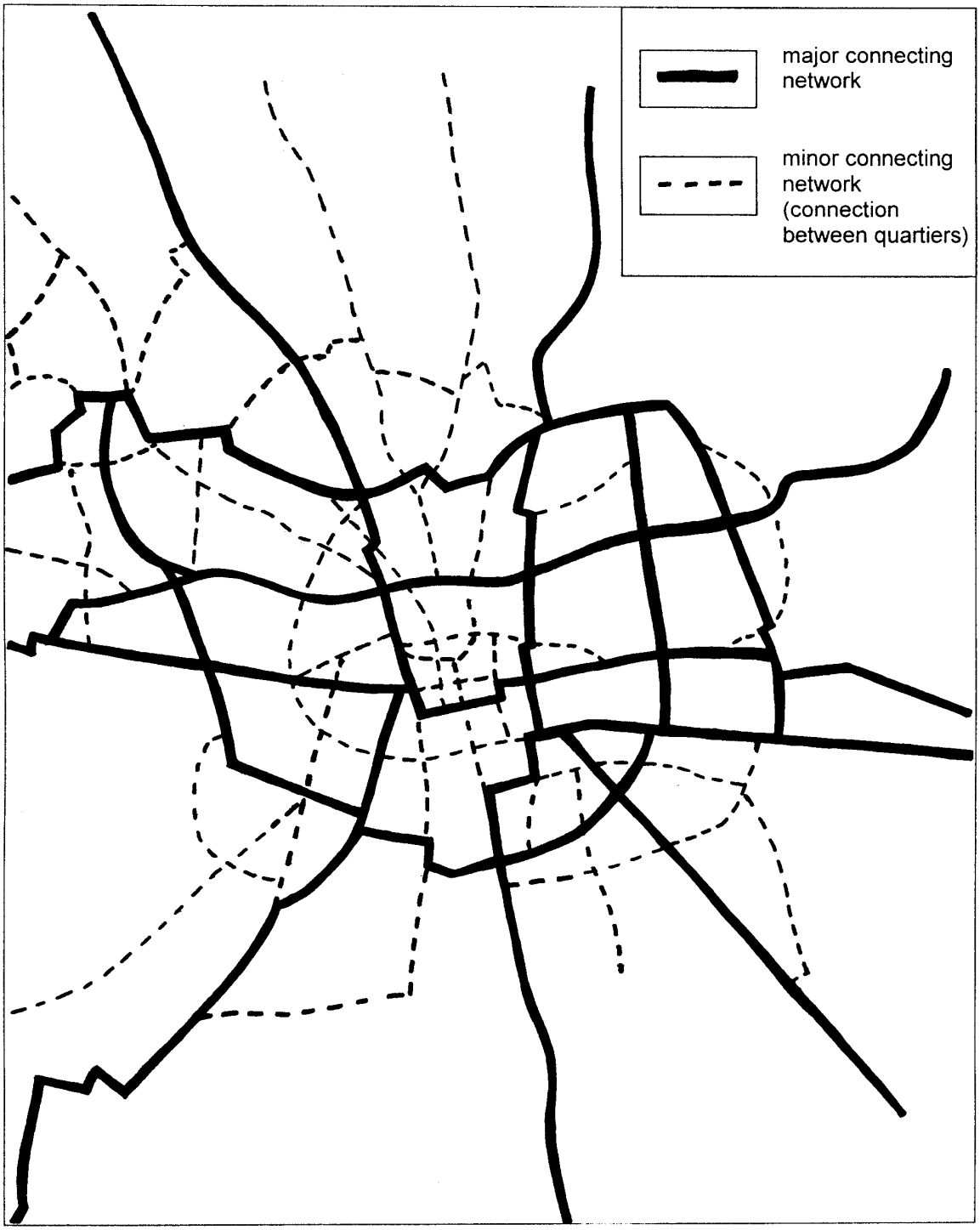

Basis network of Darmstadt
(Source: Frank und Stete, plan & rat, 1995)

figure 7:basic network of Darmstadt .

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uninhabited or monofunctional areas like industrial areas. These areas are only lively during certain hours. –important mainly for women (social safety).

- The secondary routes connect the typical neighborhood centers to each other (schools, shopping centers). They are connected to the primary routes and lead in most cases through urban development and traffic calmed areas.

6. Modal split

Apart from the residential structure, the topographic situation and the tradition to ride a bike, bicycling's potential and its part of the modal split depends on the urban settlement development and the given transportation policy (i.e. the policy concerning the green modes) and on the general atmosphere in relationship to bikes that reigns in a certain town.

Towns with a biking tradition and a bike-friendly infrastructure have an above-average use rate of bikes. Towns that pursue a bike-friendly traffic planning policy have a bicycling proportion of 20 to 30% in the overall traffic. There, the bike is also used by people who have a car.
figure 8 demonstrates the results of a survey of the modal split in selected cities in Germany. There are the traditional biking cities like Münster, Erlangen and Freiburg.

- These cities have a long biking tradition for almost 20 years.
- Their traffic planning schemes include the bike, the urban planning schemes too.

The result is a proportion of 30% bicycle transportation and a decreasing part of motor traffic. On an average, 12% of all trips in Germany are made by bike (walking 27%, private car 52%, public transport 9%).

The big cities are a problem. They have a rather small proportion of bicycle transportation and a higher rate of public transport. But there are also differences. Cologne and The Munich pursue a good bicycle transportation policy and make considerable efforts to improve the infrastructure

	city / year	population	walk	bicycle	public transport	private car
traditional "bicycle cities"	**Münster (1994)**	280.000	22%	32%	10%	36%
	Erlangen (1995)	102.000	19%	30%	12%	39%
	Freiburg (1992)	200.000	21%	19%	18%	42%
big cities	**Cologne (1997)**	1 Mio.	29%	10%	23%	38%
	Munich (1995)	1,2 Mio	23%	14%	25%	38%
	Stuttgart (1990)	564.000	28%	6%	23%	43%
medium-sized cities	**Troisdorf (1996)**	70.000	20%	21%	7%	52%
	Marl (1991)	90.000	17%	24%	4%	55%
average			**27%**	**12%**	**9%**	**52%**

figure 8: modal split in selected german cities

The result: the proportion of bicycle transportation rose from 7,2% to 12%. That can't be said of Stuttgart(from 5,8% to 6,0%).These cities feature also a high rate of public transport and a relatively small and decreasing proportion of private car drivers. This is particularly true for the inner cities where the increase in bicycle transportation is particularly apparent. par example in Cologne. Here in the inner cities we find a decreasing rate of motorisation too. And I think that is very important for network planning

The medium-sized towns of Troisdorf and Marl are two examples of communities where considerable efforts to promote bicycle transportation were made during the past few years. The two towns are members of a state-wide working group called „Bicycle-friendly towns“ in which 25 cities and towns have been working for five years now with financial support of the state to promote bicycle transportation.

The Troisdorf example: Bicycle transportation accounts for roughly 21%.Over the period from 1988 to 1996 the proportion of car traffic dropped from 57% to 52%.Studies gave exact evidence of a move towards bicycle transportation. But on the whole there is still a high level of car traffic. This is a typical feature of medium-sized towns in a rather rural environment.
But the example of these towns also shows that bicycle transportation has only a chance to develop in those communities where the daily end-of-trip destinations are located closely enough. Consequently, there is a relationship between bicycle promotion, general urban development and urban transport too.

7. Conclusion

I hope I could give some insights into the subject, the concepts of urban planning and settlement structures to promote bicycle use. IImportant is mixed land use, an attractive and secure basic network with different cycling faclilities.
But promoting bicycle usage is more than a good infrastructure. It depends on the general atmosphere in relationship to bikes that reigns in a town. That means

-integrated planning approach
-public participation
-press reports and
-a lot of public campaigns