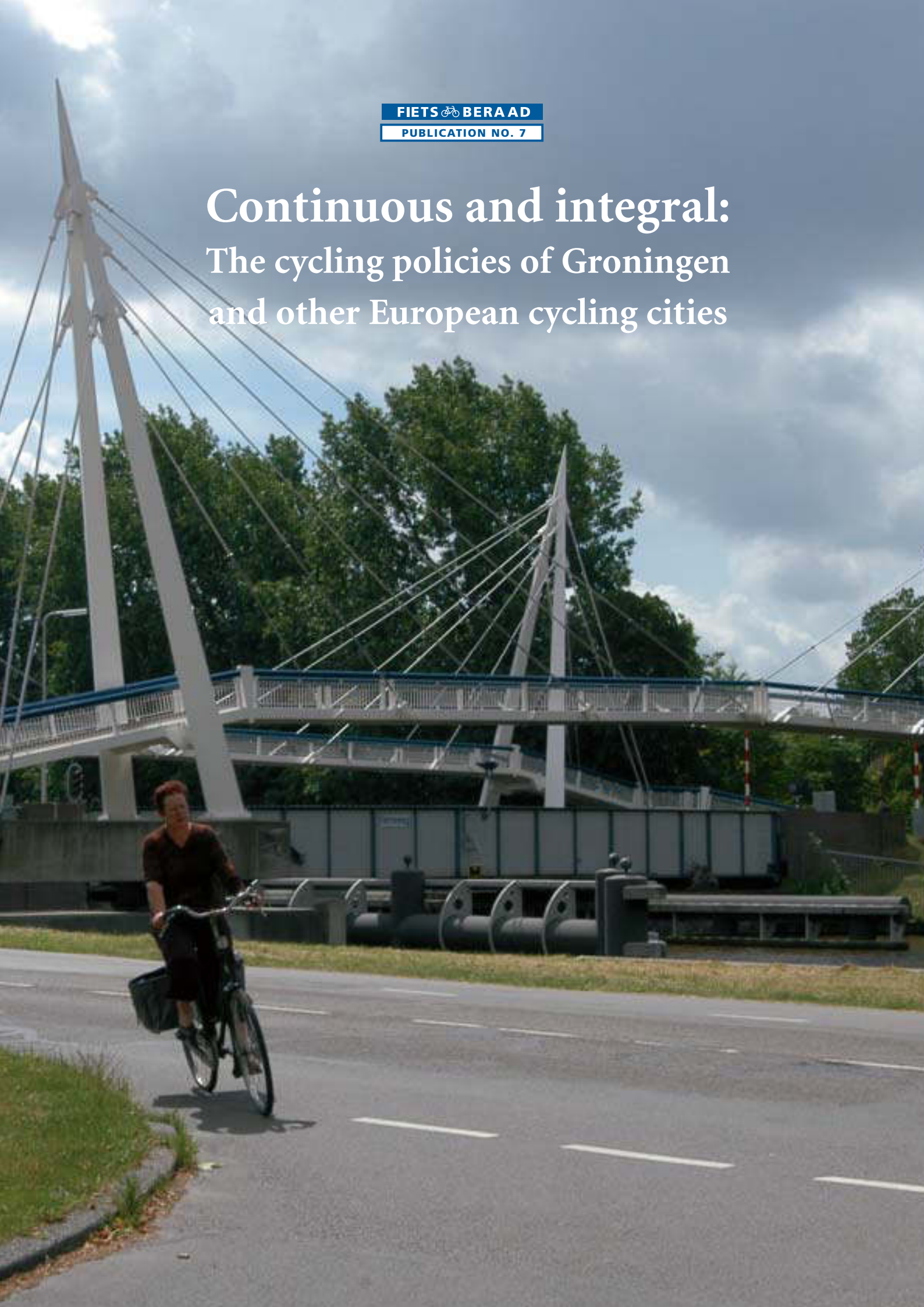

FIETS BERAAD
PUBLICATION NO. 7

Continuous and integral:
The cycling policies of Groningen and other European cycling cities

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Contents

Preface

This Fietsberaad-publication contains a number of accounts concerning the traffic policy of several cities characterised by a relatively high degree of bicycle use, extending over a prolonged period. Each account gives a specific picture of the 'course of development' of bicycle use in a municipality and the relation between bicycle use and local policy. They concern five cities in the Netherlands known as 'cycling cities': Groningen, Amsterdam, Enschede, Zwolle and Veenendaal. This is added by a selection of five cities from other neighbouring countries that also know a respectable level of bicycle use: Münster and Freiburg in Germany, Copenhagen and Odense in Denmark and Ghent in Belgium.

The immediate ground for this publication is the study of Boersma & Van Alteren, completed some time ago, seeking an explanation for the high degree of bicycle use in Groningen. For this reason the Groningen case receives most attention in this publication; the Boersma & Van Alteren report is summarised extensively. The Groningen account, and, for that matter, most of the other accounts as well are slightly adapted versions of articles published earlier in *Fietsverkeer* magazine. This, however, does not apply to Odense and Copenhagen, both of them new accounts.

The ten city accounts each give a picture of the way in which cycling policy has contributed to the high degree of bicycle use over a prolonged period. Although they are indeed ten unique stories, they do correspond in quite a few places; parallels that could serve as examples of the ways in which a high degree of bicycle use can be attained - in the long run!

Dick Buursink,
president of the Fietsberaad

1. Introduction

1.1 Continuous and integral municipal cycling policy

'Continuous' and 'integral'; two words, together reflecting the essence of explanations for high degrees of bicycle use on a municipal level, as these have appeared from various studies over the years. Prolonged, consistent cycling policy; policy embedded in a wider policy context of local, 'deeply-felt' objectives.

The above word pair, with an emphasis on 'continuous' already was the object of a 1999 study by the 'Stichting Historie der Techniek' *(SHT, Foundation for the History of Technology*) seeking to explain differences in the development of bicycle use in a number of European cities. Giving bicycle use a long-term, and in retrospect, early appropriate place in traffic policy is seen by this study as an important explanation for the fairly exceptional development of bicycle use in the Netherlands, compared to cities in neighbouring European countries. The outcomes of this study are summarised in brief in section 1.3 (published earlier in *Fietsverkeer* magazine n° 7).
The emphasis on 'integral' traffic policy undoubtedly comes out in the SHT-study and is even more prominent in recent studies trying to explain differences in bicycle use between municipalities from a statistic viewpoint. For "Fietsberaad", Research voor Beleid recently prepared an 'ultimate' explanation model for municipal bicycle use, based on earlier attempts. The importance of an integral traffic policy comes out immediately here. The outcomes of this study are summarised in section 1.4 (also included in *Beleidswijzer Fietsverkeer*, December 2005).

The ten city accounts collected here are mainly *specifications* of the general line between 'continuous' and 'integral'. Each city has its own account, with its own specific accents mainly based on local conditions. The parallels and differences found in these ten accounts are analysed in detail in chapter 12 at the end of this publication. First, section 1.2 contains an illustration of the degree in which the cities described here are the top of bicycle use in Europe.

1.2 Cycling cities in Europe

Ten cities with a respectable bicycle use - although the fact remains that the top cities in the Netherlands have a considerably higher level of bicycle use than the 'best' cities in the neighbouring countries.

Table 1. Bicycle use in ten European 'cycling cities' (with bicycle shares running down)

	inhabitants	bicycle share in all trips of the inhabitants
Groningen	177.000	37%
Zwolle	110.000	37%
Veenendaal	61.000	32%
Enschede	152.000	31%
Münster	280.000	27%
Amsterdam	735.000	27%
Odense	185.000	25%
Freiburg (im Breisgau)	213.000	22%
Kopenhagen	502.000	23%
Gent	231.000	15%

There certainly are some foreign cities that claim higher bicycle share percentages. Yet, close study shows that in these cases it only concerns local trips within municipal boundaries, or specific segments like commuter traffic. The above table and the national surveys below always start from figures that are known to relate to the bicycle share in *all* journeys (by inhabitants of the city or country concerned). These figures originate from many sources; at least two per city (minor differences have been erased).

The Netherlands, Denmark, Germany and Belgium are the countries showing the highest bicycle use in Europe. The ten cities discussed here really belong to the top as far as bicycle use is concerned. Groningen and Zwolle are the Netherlands' absolute top, with Veenendaal and Enschede just behind. For this reason bicycle use in the 'best' cities of the Netherlands is of a level completely different from cities in Denmark, Germany and Belgium - and obviously of an altogether different level than in cities in the other European countries:

- In **the Netherlands** the bicycle share has been ca. 26 % over the last decades. The top municipalities score between 35% and 40%; cities with the lowest bicycle use figure between 15% and 20%.
- In **Denmark** the bicycle share is almost 20%. The differences in bicycle use among the larger cities are relatively small. Bicycle use is fairly generally found on the level of 20% of all trips.
- In **Germany** an average 10% of all trips is by bicycle. The western federal states know a higher average bicycle use, especially Nordrhein-Westfalen. Except for Münster and Freiburg there are far more cities with bicycle shares between 20% and 30%.
- **Belgium** has an average bicycle share of 8%. Many cities in Flanders approach the level of Ghent: almost 15%. Some sources give a higher bicycle share to the city of Bruges - almost 20%.

For many European countries and cities low bicycle shares certainly do not automatically imply a high degree of car use. There are also large differences between countries and cities as far as numbers of pedestrians and especially public transport users are concerned. Southern European cities are often characterised by high 'walking' shares; for instance San Sebastian in Spain: 3% bicycle against 'only' 34% car, because public transport plays an important role in San Sebastian (19%), and last not least: walking - a striking 44% of all trips. London has a similar pattern, though slightly less extreme: only 1% bicycle, but instead 18% public transport and 37% walking, and consequently 44% car 'only'. The lowest car shares are found in cities with relatively high scores for walking, cycling and public transport. Many cities in Switzerland show a somewhat resembling pattern: over 20% walking, over 10% bicycle and ca. 30% public transport - with a relatively low car use as a result (roughly 30% in Basel, Bern and Zürich).

Although average bicycle use in other European countries is much lower we find some striking extremes from time to time:

- Average bicycle use in **Great-Britain** is only 2%, but there are several isolated cities with a much higher degree of bicycle use (York and Hull 11%, Oxford and especially Cambridge nearing 20%). A similar pattern - even slightly more extreme - is found in Sweden and especially Italy.
- **Ireland** scores 3% - 4%, with virtually no upward extremes (Dublin 5% at most).
- In **Sweden** bicycle use averages 7% of all trips; for cities this is 10%. Extremes: Lund a nd Malmö 20%. The small city of Västerås (115,000 inhabitants) has an incredible 33% bicycle share according to a source quoted time and time again.

Västerås

- In **Czechia**, as in more Eastern European countries, there are a few cities with some degree of bicycle use (Ostrava, Olomouc and Ceské Budejovice, between 5% and 10%) and some with an even higher bicycle use (Prostejov 20%). However, average use is low: way below 5%.
- **Austria** has an average bicycle share of 9%, with Graz (14%) and Salzburg (19%) as extremes.
- **Switzerland** scores not yet 10% for bicycle use, with several cities at a higher level, like Bern (15%), Basel (17%) and especially Winterthur (ca. 20%).
- **France** has a low average bicycle use (5%), nor has it many extremes: Strasbourg 12%, Avignon 10%.
- Although in **Italy** average bicycle use is as little as 5% there are a few striking exceptions. Especially the Po Plains, with places like Parma (over 15%) and Ferrara as the best-known extreme example: around 30% bicycle share. Another striking Italian city is Florence (over 20%).

This summary clearly indicates how much bicycle use varies within Europe, per country and especially per city. Nowhere are the Dutch bicycle use levels even approached, Denmark coming closest. From a more regional perspective this in a way applies to Nordrhein-Westfalen and Flanders as well. Another, simultaneous conclusion is that even in non-bicycle countries there is a striking number of cities with respectable levels of bicycle use, such as Great-Britain, Czechia, Sweden and Italy.

1.3 Sustained: conclusion of the SHT-study

Is cycling policy effective? Or, putting it more accurately and realistic: how great can the influence of a cycling policy be? During the mid-nineties this ever-recurring question was the starting-point of extensive historic study, performed by the Stichting Historie der Techniek *(SHT, Foundation for the History of Technology)* and commissioned by the Dutch Ministry of Transport and Water Management. In April 1999 the large, beautifully illustrated public version of the study report was published. Its conclusions are still completely up-to-date and worth reading.

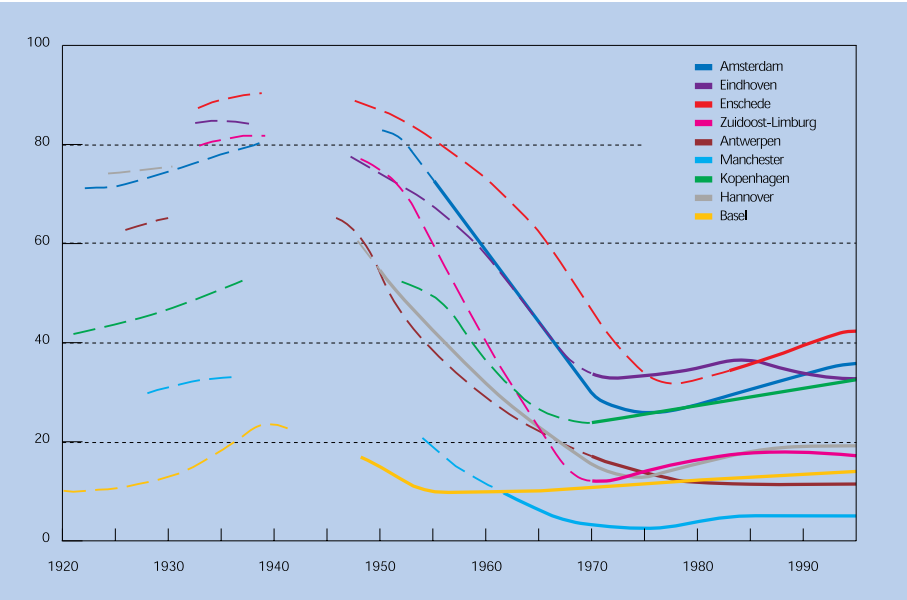
photo: Philips concernarchief

Eindhoven, end of a working day at the Philips factories, Emmasingel, 1939

This historic study was based on an investigation of three Dutch cities known for their relatively high share of bicycle use (Amsterdam, Eindhoven and Enschede) and an urban region with a low share of bicycle use (South-East Limburg: Kerkrade-Heerlen). In surrounding countries five cities were studied: cycling city Copenhagen, the bicycle-free city of Manchester and finally Antwerp, Basel and Hannover; cities that are somewhere in the middle as regards bicycle use. For all cities, city development and traffic policy since 1900 were the objects of study by way of detailed investigation of city records. Much time also went in the reconstruction of a comparable trend line of bicycle use in each of these cities, in the variable to be explained (see Figure 1) and in a search for explanations for these trend lines and their relating differences among cities.

The trend lines of Figure 1 are based on various kinds of figures, with the required assumptions varying in their degrees of influence. In places where the trend line is interrupted and thin, estimates have played a more important part. Where estimates over certain periods appear to be impossible the trend line is missing.

Figure 1. Reconstructed trend lines of bicycle shares in the total number of car, bicycle, moped and public transport journeys, 1920-1995 (in %)



Parallels

The curves of all nine trend lines can be compared very well. From 1900 onwards the bicycle very quickly transformed from a product for recreational purposes for a small elite into a utilitarian mass product for all social statuses. All cities know relatively high degrees of bicycle use until way into the '50s, although at different levels. Differences in bicycle shares between cities before the Second World War have little if anything to do with the position of the motor car, but with the degree in which citizens go on foot and especially with the (early) development of a suitable public transport system (as was the case in Manchester). The sharp decline in bicycle use, especially in the '60s, was the result of the rapid advance of the motor car. From the '70s onwards we see a universal stabilisation or a renewed development of bicycle use.

photo: Historisch-topografische Atlas Gemeentearchief Amsterdam

Amsterdam, Stadhouderskade and on the right Overtoom, February 1939

Differences

Apart from the general parallels in the trend lines of Figure 1 we immediately find very striking differences. Differences in the level on which this general continuous movement takes place, and differences in strength of the rise and fall of the bicycle use share. The SHT-report concludes that the eventual differences in cities in the '90s can be explained in a clear way:

- A high bicycle share (more than 30%) for Amsterdam, Eindhoven, Enschede and Copenhagen; cities that never saw the arrival of a 'bicycle use-consuming' public transport system and where bicycle traffic had always been a regular component of traffic policy: 'Accepting the cyclist as a "normal" traffic participant with equal rights in the '50s and '60s has been (...) a crucial factor: the realisation of a motor car infrastructure is not at the expense of the cyclist; the collective bicycle picture is fairly positive and especially "rational".'
- An average bicycle share (ca. 20%) for South-East Limburg and Hannover. Here, the rise of the motor car coincided with a more manifest pro-car policy and a spatial structure which was more in line with the motor car.
- A low bicycle share (ca. 10% or below) for Antwerp, Manchester and Basel. Here it is especially the car-oriented traffic policy that explains matters, and the manifest influence of an early, properly functioning public transport system (Manchester): 'The decline which was the result of the arrival of the motor car continues uninterrupted and without "brakes", because all relevant influencing factors are pointing in the same direction: a negative collective picture, a strong car-oriented policy, realisation of a large-scale car infrastructure, strong suburbanisation (...).'

photo: Ramseyer (Basler Verkehrsprobleme, 1951)

Rush hour at the crossing Margarethenbrücke in Basel, approximately 1950

Continuous

The essence of the conclusions drawn by the SHT-researchers is that the differences in bicycle use occurring between cities in the '90s can in the first place be explained from the view of local spatial and traffic policy and the resulting 'local picture' of the role and value of bicycle use. However, as this explanation is a long-term one it must be considered over decades. With regard to spatial policy and picture-forming this conclusion is not surprising,

photo: Gemeentearchief Enschede

Enschede, Hengelosestraat, bicycle parking behind V&D, 1939

as by their very nature they will only very gradually result in changes. All this left aside, traffic policy also appears to have a relevant, continuous influence. Political choices made in the '50s and '60s still resound in our present time.
This conclusion can best be illustrated by way of extremes. For instance, the three cities with a relatively low bicycle use share, Antwerp, Basel and Manchester, conducted an emphatic, explicit policy strongly aimed at facilitating motor car use for decades. This policy was based on socially supported 'pictures' representing the future role of the bicycle as limited. This is opposed by cities with a relatively high bicycle use share, Amsterdam, Eindhoven, Enschede and Copenhagen, cities that invariably took their actual traffic situation as starting-point for policy, including the role played by the bicycle in this respect and without sharply outlined predictions setting the standard.

To discourage or to accept

In various foreign cities a negative image and the ensuing concrete 'anti-bicycle' measures were intense to a degree that we assume is hard to imagine for the present-day people of the Netherlands. A few examples. In Antwerp, Hannover and Basel actual bicycle infrastructures were 'removed' from the '50 onwards; cycle paths were converted into car lanes and cycle lanes into parking lanes. In Antwerp cyclists were obliged to ride in a queue from 1939 onwards as they would take too much space if they did not. In 1944 the Basel municipal council wrote 1944: *'Prinzipiell ist heute zu sagen, daß in der eigentlichen Stadt Radfahrwege nicht mehr erwünscht sind.'* ('In principle one could now say that cycle paths a no longer desirable in the city proper.') After all, cycle paths could not be projected wide enough due to the amount of space needed by cars, so it was better to have just one very narrow strip. Even stronger so: in 1951 the city centre imposed the use of public bicycle parking facilities with a maximum parking duration of one to two hours! In this respect most of the cities in the Netherlands give proof of at least a certain degree of tolerance of bicycle traffic in their traffic policy in the '50s and '60s. It is this acceptance of reality that even in 2006 is largely responsible for this constant, high share of bicycle use in the Netherlands. Policy is therefore effective, even if this does not work towards active promotion but to just accepting the very existence of the bicycle and the facilities it requires.

1.4 Integral: conclusion of the 'Explanation Model' project

Occasion

From a global perspective bicycle use in the Netherlands is very high. At the same time there are clear differences within the Netherlands, especially on municipal levels. The question of how to explain these differences has been often asked and is indeed very relevant, because the answer in a way tells us about the degree in which bicycle use can be affected by (municipal) cycling policy. Over the past few years various studies have shown that municipal differences in bicycle use can be explained fairly well and that cycling policy does play a rather prominent role as regards explanation factors as a whole. In 2005 a study was completed, giving a very well-founded answer to the question of how to explain municipal differences in bicycle use, and what role (elements of) cycling policy and (wider) traffic policy play in this respect.

Source: Research voor Beleid, Verklaringsmodel voor fietsgebruik gemeenten, Leiden, January 2006 (downloaded via 'Rapporten' on www.fietsberaad.nl).

The Explanation Model

Research involved 44 factors in its analysis. Very diverse by nature, these factors were selected on the basis of existing knowledge about possible factors influencing bicycle use. The eventually resulting explanation model contains eleven factors:

1. bicycle-car travelling time ratio (bicycle time-car time)
2. car parking charges (eurocents/h)
3. bus, tram and underground shares in all trips of citizens (%)
4. built-up area surface (hectares)
5. share of juveniles (number of 10 to 20-year-olds/number of citizens in %)
6. share of single-person households
7. number of persons on unemployment benefit (number of unemployed/number of citizens)
8. number of protestants (number of citizens calling themselves protestants/number of citizens in %)
9. number of islamic persons (number of citizens calling themselves islamic/number of citizens in %)
10. average rainfall etc. (average annual rainfall 1971-2000, three averages in mm)
11. degree of relief (four categories, from 0 to 1)

This model as such is a composition of traffic-scientific, spatial-economic and also demographic, cultural and geographical factors. About one-third of the explanatory power of this model lies in the four factors denoting something like 'integral traffic policy' (bicycle-car travelling time ratio, car parking charges, share of bus, tram and underground and surface of built-up area).

The 'variable to be explained', the indicator for bicycle use, was determined as follows: the 2000-2003 average of the total number of trips per bicycle per person/citizen and per day. For the Netherlands as a whole this is about 0.80 bicycle trips (more than 25% of the 3.15 that has for many years been the average of the number of trips per Dutch citizen per day). As a formula, the model presents the following picture (B-coefficients rounded-off):

> Bicycle use (number of bicycle trips per person per day) = 1.224 – 0.18 travelling time ratio + 0.0025 parking charges – 0.023 BTU – 0.000033 built-up area surface + 0.037 juveniles + 0.0081 single-person households – 0.010 unemployed + 0.0024 protestants – 0.027 islamics – 0.00071 rainfall – 0.324 relief

Illustration

This table formula first and foremost points out the direction the influence of a variable takes as regards bicycle use. Bicycle use drops with rising shares of islamic persons. The same applies to relief of the soil, the number of unemployed, the share of bus, tram and

Enschede

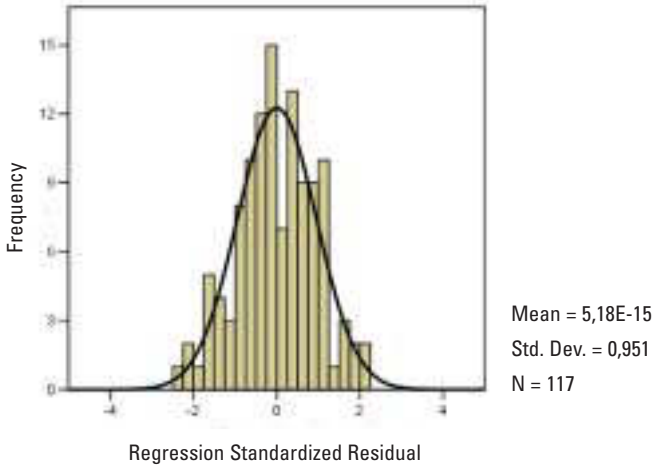
underground, the surface of the built-up area, the amount of for instance rainfall and the travelling time ratio between bicycle and car. On the other hand, the share of young persons aged 10-20, the share of single-person households, car parking costs and the share of protestants do have a positive influence on bicycle use. The formula also tells something about the weights of the factors, the extent to which differences and changes affect bicycle use.
A few examples:

- The bicycle-car travelling-time ratio is between 0.8 and 1.1 in many cities. This difference (0.3) is roughly the maximum influence this factor can have - or has had - on bicycle use. When multiplying this with the coefficient of this factor (- 0.18) you obtain the margin in which the influence of this travelling-time ratio is found: 0.054 in comparison with the 0.80 of the number of bicycle trips per person per day. A city that has this very bad travelling-time ratio (1.1) for bicycles may well be able to achieve this very good 0.8 travelling-time ratio with the help of continuous (integral!) policy and can as such be expected to increase its bicycle use from 0.775 to 0.825 bicycle trips per person per day, for instance. Assuming that the total number of trips per person does not change (there has not been a change for decades), this will result in an increase in the bicycle share from 24.6% to 26.2%.
- The car parking costs measured in "Fietsbalans" are on a level exceeding 50 eurocents per hour in the most expensive cities. There are also many municipalities that offer free long-stay parking: 0 cents. In the model, this practical margin of 50 cents per hour implies a difference of (0.0025 x 50) 0.125 in the number of bicycle trips per person per day; so in general the difference between 0.72 and 0.86 bicycle trips, or the difference between 22.8% and 27.3% bicycle share in the modal split.
- In the model, the condition of whether or not there are hilly grounds in the built-up area (score between 0 and 1) implies a margin of 0.324: 22.8% or 28.0% bicycle share in the modal split of the average Dutch municipality.

Great explanation power

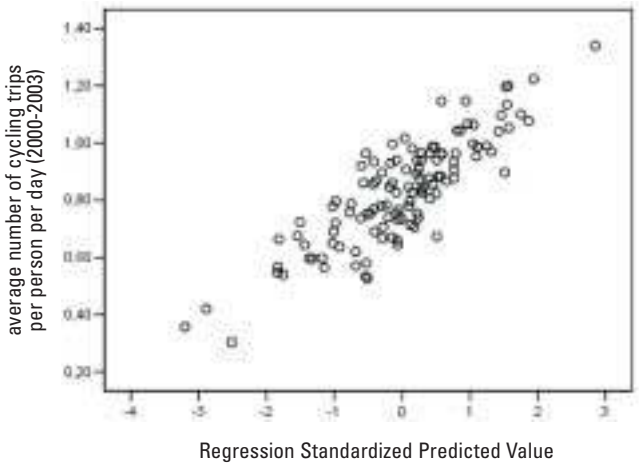
When quantifying the 'explanation power' in statistic terms, the explanation model of these 11 factors has an R^2 of 0.726. This means that almost 73% of the variance in bicycle use among municipalities is explained by these factors. This is considerable, and we can therefore say that this model has great explanation power. When comparing the value predicted by way of this formula with the actual value for each municipality, the following distribution is obtained for the differences (residues):

Figure 2. Dependent variable: average number of bicycle trips per person per day, 2000-2003



We see that the residues are distributed in an approximately normal way, at an almost 0 average. This means that the model is statistically adequate for these data. When setting off the predicted value against the actual value according to the formula above, the following picture is obtained:

Figure 3. Dependent variable: average number of bicycle trips per person per day, 2000-2003



This shows that the model is a good predictor of actual bicycle use: the point cloud is elongated and there are no points far removed from the diagonal. In short, a good predictor and therefore a good 'explainer' of present-day bicycle use per municipality.

Consequence of the model

The great explanation power of this model serves to make clear that in the Netherlands we have by now reached such a degree of knowledge development about bicycle use that we are very well able to explain municipal differences. As a result, this knowledge is of excellent use for political choices. What is also clear is that bicycle use can be explained by way of a set of fairly 'hard' factors, often clearly and directly related to bicycle use. On the other hand there are quite a few differences in bicycle use that cannot be explained by way of the model (the 27% unexplained variance).

The model also serves to make clear that cycling policy is not everything but it must not be neglected either. Although traffic policy choices surely play a part (car-bicycle travelling-time ratio, car parking costs, shares of bus, tram, underground) they cannot by far explain all differences in bicycle use. Pure traffic policy factors can account for ca. 40% of all differences. This became clear when a few models were constructed only by way of these factors of traffic policy at some stages of this research.

2. Groningen: compact cycling city

To many other cities in the Netherlands and abroad, Groningen sets the example as regards bicycle climate and bicycle use. What has made these two factors so prominent here? The answer revolves around three key words: policy, coherence and continuity. The municipality for instance conducts a broad cycling policy, firmly embedded in overall transport and traffic policy. On the other hand, spatial policy has been persistently oriented at a compact city for decades, offering many activities well within bicycle reach to its citizens. This, putting it briefly, is the success of vision, political choices and effort on the part of civil service.

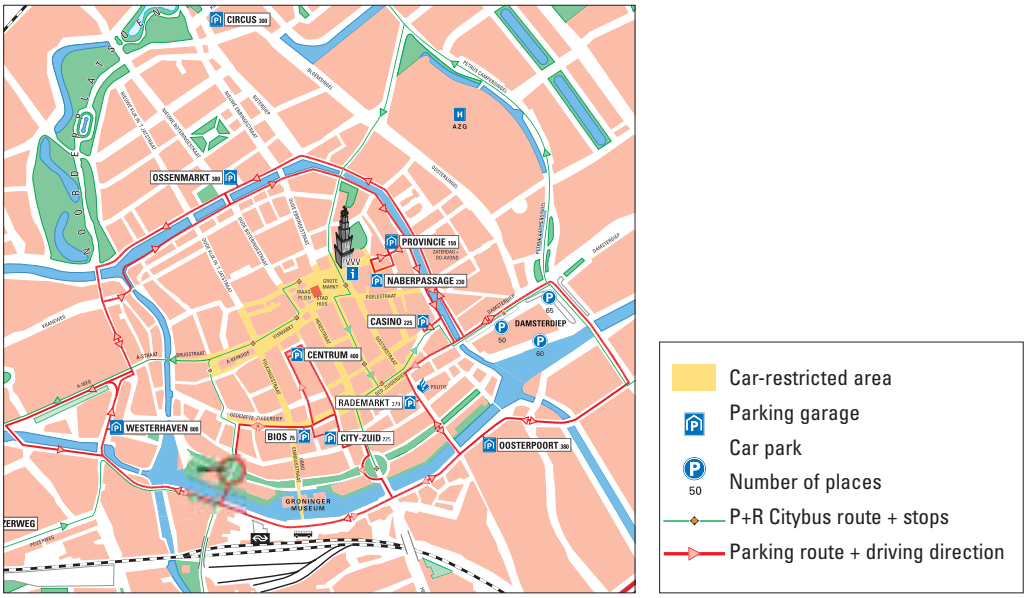
Groningen, the city

Groningen has been a regional centre from the thirteenth century onwards. As a Hanze city it had been a centre of trade and industry for ages. A university city, Groningen still occupies the seventh position as regards number of citizens, although its population has hardly increased since the '50s: from 150,000 to 178,000. The number of jobs is roughly 115,000. About 55,000 of these are located in and around the city centre. Half of all workers live outside the municipality. The main employers are the two universities, employing almost 7,000 people and accommodating more than 36,000 students, and the Academic Hospital, employing 7,000 people.

The city has a compact spatial (built-up) structure, even though the number of inhabitants per hectare of residential area decreased from 136 to 71 between 1964 and 2000. Within a 3-km radius from the heart of the city we find 78% of all inhabitants and 90% of all jobs; nearly all buildings are found within a 5-km radius. The main road system texture is coarse and intended as a concentration area for car traffic. Its structure is characterised by five radial routes connecting the city centre with the suburbs, and a ring road to which radial arterial roads are branching on from out of the surrounding region. The city's most ancient streets, the Hereweg (situated on top of the 'Hondsrug' downland) and the Oude Boteringestraat run in a north-south direction to the Grote Markt and the Vismarkt, both of them squares in the heart of the city. Around the car-restricted, partly car-free city centre a car park distribution ring is operational (eleven parking garages all of them nearby) for the inner city and the adjoining residential quarters.

Public transport (bus and train) is also characterised by an outspoken radial structure, running largely parallel to the main car traffic structure (especially along the routes leading from the ring roads to the inner city). All city and district public transport (bus and train) converges in two mutually connected public transport nodes in the city centre and central station area.

Map 1. Groningen



Groningen, cycling city: how come?

In 2002 the Dutch cyclists' union proclaimed Groningen 'Cycling City of the Year'. As regards bicycle use the city has topped the ratings of Dutch cycling cities for years: the share of trips by bicycle of the citizens of Groningen has been hovering around a level of just under 40% for almost twenty years. This awards Groningen the first place among the main cities, occasionally taking turns with Zwolle. The question is how the municipality of Groningen managed to achieve all this. Is this only the result of cycling policy 'in a strict sense'; activities based on a policy directed purely at bicycle traffic? Not likely, considering Groningen's relatively high 'Fietsbalans' score in the competitive position of the bicycle compared to the car and the city's urban density. These scores indicate a relation with integral transport-and-traffic policy and with spatial policy.

Cycling policy

Picture 1 starts out with the main bicycle facilities around 1964; a time when only a few 'pure' cyclists' facilities had been realised. Through cycle paths were only found alongside the Hereweg-Herestraat, the Paterswoldseweg and a part of the Friesestraatweg.
Although the first municipal bicycle policy document dates back to 1986, cycling policy had already received attention at an earlier stage. The 1969 traffic plan named *Verkeersplan Centrum Groningen* already assigned priority to bicycle traffic facilities. Preventing cycling detours received much attention when one-way car traffic was introduced as a measure affecting circulation. It was felt important to create uninterrupted, long bicycle routes as part of a route network. Efforts had to be put in to interrupt cyclists' movements in as few places as possible and to diminish the risk of accidents. To achieve this, own domains for cyclists and traffic regulation facilities were considered desirable. Also the 1976 traffic circulation plan named *Verkeerscirculatieplan* devoted much attention to bicycle traffic. 2.7 million of the almost 6.4 million euros spent on the realisation of this plan went to bicycle facilities. Realising all these plans implied that the bicycle traffic infrastructure would steadily expand in the years to come. See Picture 1.

Picture 1. Main bicycle infrastructure around 1964, 1980 and 2000

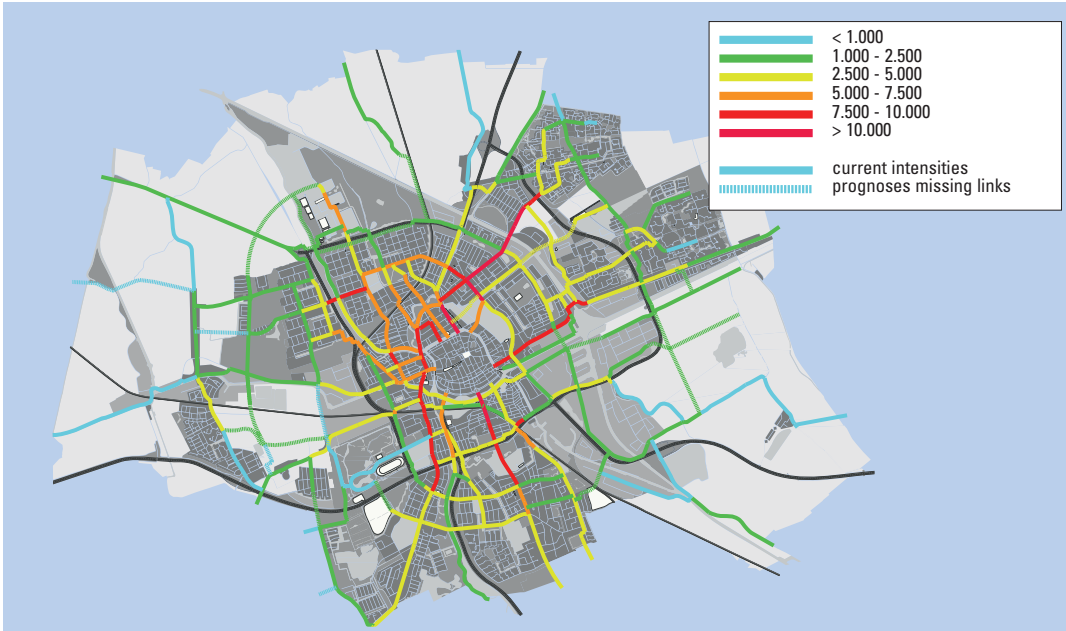
In the early '80s an experiment was started with a surveyed bicycle parking facility in the city centre. Tests were successful and were followed up. By now the city has a network of almost thirty surveyed bicycle parking facilities. Next to traffic safety, social safety also received more and more attention. This was materialised by the municipality in a cycling policy budget, whether or not with financial support from the government and the province.

The 1986 bicycle policy document named *Nota Fietsvoorzieningen* concluded that the initial decline in bicycle use in the '60s and the simultaneous growth of car use had been succeeded by a renewed growth of bicycle use by the mid-'70s, against all expectations. "Not only did this growth express itself in a recreational and physical training environment - witness the massive growth in the number of sports cyclists - also the share of the bicycle in commuter traffic rose sharply. The car-restricting measures in many cities and the costs of car obviously relate to this. Also the municipality of Groningen conducts a traffic policy focusing on bicycle traffic and its promotion." Gerrit van Werven, policy-making official, in those days in charge of the preparation of *Nota Fietsvoorzieningen*, emphasises that this was the Netherlands' first fully-fledged bicycle policy document. Admittedly, Delft for instance also had its own policy document, but it only related to the city's bicycle network. Instead, the municipality of Groningen had an integral plan, directed at the broad spectrum of cycling policy.

The 2000 bicycle policy document named *Nota Fietsverkeer* shows that the municipality of Groningen invested a total of almost 23 million euros in bicycle facilities during the period between 1989 and 2000; facilities like cycle paths and bridges and asphalt cycle path surfa-

ces. We see specific bicycle traffic investments and investments in bicycle traffic as a result of other plans. The 2000 *Nota Fietsverkeer* itself resulted in an extra financial effort on the part of the municipality, namely another 4 million euros for the years up to and including 2002 and another 5.5 million euros for the period between 2003 and 2006.
Picture 1 also shows the main bicycle facilities by the year 2000. When compared to the situation existing around 1964 a great number of bicycle facilities appear to have been realised between 1964 and 2000. All bicycle facilities between residential quarters and the city centre have in fact been realised. In addition a number of main tangential connections were laid out especially for bicycles, such as the cycle paths along the Petrus Camperboulevard and the Rosensteinlaan, the Stadspark-Peizerweg cycle paths along the Laan 40-45 and the Oosterpoort-Centraal Station-Paterswoldseweg bicycle connection.

Map 2. Bicycle use on main routes in Groningen (24 h. intensities)



Map 2 shows that by the year 2000 Groningen had a number of intensively used radial bicycle routes, especially the route from Beijum via the Korreweg and the routes following the Hereweg, Paterswoldseweg and Damsterdiep. Another heavily used transverse connection is the Pleiadenlaan-Eikenlaan-Asingastraat-Sumatralaan-Kapteynlaan route. The Ebbingestraat, too is used intensively. The total load put on the belt surrounding the inner city, meaning all bicycle traffic from various directions toward the inner city, is ca. 150,000 cyclists every 24 hours.

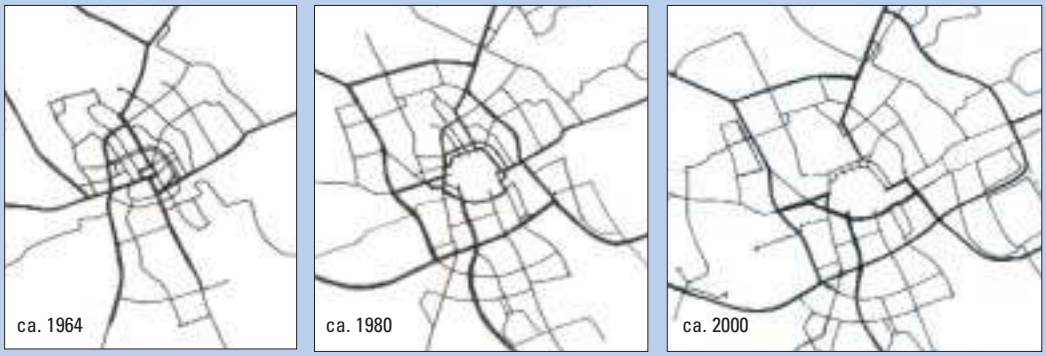
Integral traffic policy

In 1964 the advance of the motor car had only just begun in the Netherlands. At this time the Grote Markt beltway in the city centre of Groningen handled 23,000 motor vehicles every 24 hours while there were 43,000 on the canal beltway surrounding the historic city centre. The load imposed on the Grote Markt beltway was only a little below the total amount of traffic entering and departing the city!
In the present situation, with the advance of the motor car reaching its peak, there are roughly 800 buses and taxis and 30,000 motor vehicles every 24 hours. Apparently, an effective policy has been conducted and realised over the past four decades.
Its background must be found in the preceding period. The city centre of Groningen was heavily damaged during the Second World War and the northern and eastern sections of the Grote Markt, de Waagstraat and de Guldenstraat were among the sections almost fully destroyed during fights between the Canadian army and the German occupying forces. Reconstruction allowed more space to motorised traffic; the centre could now be accessed via wide arterial roads and passed via the Grote Markt, a sort of traffic square surrounded by wide one-way roads having four or five lanes. There was no proper ring road at all.

Car traffic boomed in the '60s, a development which was expected to continue even more strongly. It is striking that car ownership in Groningen in 1965 was slightly above the national average (110 cars per 1,000 inhabitants compared to the national average of 100 cars per 1,000 inhabitants). Between 1955 and 1968 car traffic in Groningen became threefold; between 1960 and 1968 it doubled. Public transport declined sharply in this same period. Traffic on one of Groningen's main public transport lines fell by ca. 45% between 1958 and 1967 (1,970 to 1,093 million passengers per year).
In 1969 this induced the municipal executive to present a traffic circulation plan characterised by a far-reaching vision. Named *Verkeerscirculatieplan Groningen 1968-1969* this provided for a distribution ring closely encircling the city centre (Diepenring and Zuiderdiep).
The traffic structure would moreover be composed of three tangents: the inner, middle and outer tangent. The distribution ring and the inner and middle tangents would result in large-scale traffic breakthroughs.
The plan evoked much resistance and the municipal executive finally came to conclude that, apart from economic development, a liveable, small-scale inner city as a venue for all kinds of activity and with a mixture of living, working and shopping functions favouring pedestrians, cyclists and public transport was another thing worth considering. This implied the end of the construction plans of the inner, middle and outer tangents. Only the Zuiderdiep was fully transformed into an arterial road consisting of four to six lanes, all in accordance with the starting-points of *Verkeerscirculatieplan Groningen 1968-1969*.

These changed views were recorded in a policy document named *Doelstellingennota 1972*; the 'bible of progressive urban administration' according to the *Nieuwsblad van het Noorden* newspaper. In concrete terms the amended policy implied re-allotment of the available public space. The term 'stadserf' came to apply to the area surrounding the Grote Markt, allowing more space to pedestrians and cyclists. The flow of city and district public transport was improved and bus lanes were constructed. The dominant car traffic function of the Zuiderdiep was turned back again by realising bus lanes and city centre stops for district buses and the construction of segregated, uninterrupted cycle paths.
Socialist alderman Max van den Berg commented on this in *De Volkskrant* newspaper of 24 May 1977: "I had been alderman for just two months, eight years ago, when I was shocked to learn what was going to happen to the Zuiderdiep; a wide tarmac road for car traffic cutting through the city. Although I was more than prepared to block this within the municipal executive, this had become impossible. Everything had been decided on, the contractor contracted. So I was slightly moved when the first bit of tarmac was removed last week."

Picture 2. Car traffic main road structure around 1964, 1980 and 2000



A new version of the *Verkeerscirculatieplan* was made (1975). For the purpose of barring through car traffic from the city centre, the inner city was split up into four traffic sectors: 'cake wedges'. Going straight from one sector to the other became impossible by car, but possible by bicycle. The city centre was opened up by way of a 'loop system' (one loop per sector). Through car traffic was barred from the city centre and car drivers heading for the city centre were directed to car parks in the vicinity of the city centre via the shortest possible route.
Although fiercely contested and resisted, especially by shopkeepers and businesspeople in the city centre, these plans were pushed through (September 1977). Alderman Zunderdorp during the symposium named *Voor- en nastudies rond het Verkeerscirculatieplan Groningen [Preliminary and afterstudies surrounding the Groningen traffic circulation plan]* of 10 June 1981: "Cyclists and pedestrians were seen taking possession of the space so suddenly given to them, flushed with victory (…). Simultaneously there were the car owners, driven to despair by the one-way circuits."
The VCP was in fact not intended to remove all car traffic from the city centre, but to bar through car traffic from the city centre and to guide car drivers heading for the city centre to nearby car parks as directly as possible. The VCP resulted in the car traffic main road structure around 1980, shown in Picture 2. The shift in traffic load per cordon compared to 1964 demonstrates the great consequences of the VCP. See Table 2.

Table 2. The shift in traffic load per cordon (motor vehicles per 24 hours)

	1964	1980	2000	
outer cordon	38.000	120.000	280.000	
city centre cordon	43.000	24.000	30.000	
Grote Markt cordon	23.000	1.200*	800*	** busses en taxis*

For a long time to come the great upsurge of emotion named above would play a part in the further development and implementation of municipal traffic policy. By taking measures like improvement of pedestrian facilities and linking the 'quieter' city centre streets on to busier streets the municipality worked towards continued reinforcement of the competitive position of the city centre, without having to undo the positive effects on traffic and the environment that had been the result of the VCP.

In the '80s and '90s the road system was becoming increasingly coarse in texture. Application of traffic circulation made it possible to bar through traffic from city quarters and to concentrate it on a limited number of (ring) roads. The completion of the full ring road system in 1987 made closure possible of the Lelieboulevard, which was cutting through the Noorderplantsoen. After about ten years of discussion on the pros and cons a pilot closure followed in 1993, succeeded by a referendum in October 1994 resulting in a very narrow 51% majority. Definitive closure was decided on.

Assessment shows that bicycle traffic in the Lelieboulevard and Noorderplantsoen has increased by ca. 30%. More than half of all car traffic that used to take this road through the Noorderplantsoen chose the ring road system after the above closure.

'It is priority to bicycles that keeps the city accessible.'

In a December 2003 article in edition 10 of *Verkeerskunde* magazine, Cor van der Klaauw, senior transport and traffic policy official of the municipality of Groningen and member of "Fietsberaad", responded as follows to this editor's statement: 'Car traffic flows will always be given priority by municipal traffic experts.' A few quotes of his response:

- 'Promoting bicycle use is essential to municipalities; it creates space for necessary car traffic. Even more important is the fact that more people on bicycles means fewer cars in streets. It is expected that the inevitable growth of car traffic can be accommodated within the present infrastructure in Groningen. As a result, the decision to expand infrastructure can be postponed; a nice additional advantage in these days of shrinking infrastructure budgets.'
- 'However, Groningen would not be a "cycling city" if the bicycle did not form an integral part of spatial planning and traffic and transport policy. Priority to bicycles is reflected in the following spearheads:
  - the city centre is accessible from various new residential quarters, without having to take even one traffic-light crossing;
  - traffic lights are removed wherever possible. This happened in about seven locations over the last few years;
  - heavy bicycle flows (10,000 cyclists every 24 hours) have precedence over car traffic (Korrebrug bridge);
  - four-direction green lights have been introduced at traffic-light crossings with separate traffic lights for cyclists (Herebrug and Emmabrug bridges);
  - cyclists are given the green light twice per cycle wherever possible;
  - pedestrians and cyclists take first position in the city centre;
  - short-circuit bicycle connections (Werkmanbrug bridge and Stadsweg) result in competitive travelling times compared to cars;
  - one-way streets for car traffic are always open to cyclists from both ends, unless ...'
- 'All this implies that the above editor's statement does not apply to Groningen. A subtitle to the *'Fietsstad 2002'* signs near the approach roads to the city of Groningen should therefore be: "Groningen traffic experts give priority to the bicycle to keep the city accessible to public transport and necessary car traffic."'

Considering, among other things, the bad experiences generated by the VCP and the fact that the Noorderplantsoen referendum had demonstrated the weak social basis for this measure, the municipality organised an experimental open-plan process halfway the '90s, aiming to develop urban traffic policy for the period until 2010. This process occurred with intense participation by the population and interest groups (in study groups and workshops) and a poll was organised among 5,000 people. This process resulted in the 1997 policy document named *De bereikbare stad leefbaar [The accessible city liveable]*.
The process more than once demonstrated that there was still resistance against the policy that had for many years been conducted by the municipality of Groningen (from the introduction of the VCP onwards) to bar unnecessary car traffic from the city centre and to ensure a pleasant environment for pedestrians, cyclists and residents. Two camps could clearly be distinguished at the start of this process: 'the municipality does not try hard enough for

cars' versus 'the municipality does not try hard enough for public transport and bicycles'. The first-named group largely consisted of people of the surrounding regions who worked in the city or used city facilities. The second group concerned mainly city residents who were troubled by increasing car traffic. The participants in the process were really given the opportunity to enter into the discussions, resulting in a stronger basis for traffic and transport policy in Groningen.
The essence of the policy in *De bereikbare stad leefbaar* is that a distinction is made between the areas inside and outside the ring. There are no road breakthroughs inside the ring, and efforts are directed at only a limited improvement of the infrastructure (the access routes), at traffic management and at the downward revaluation of sections of the Diepenring, where the emphasis now concerns its staying environment.

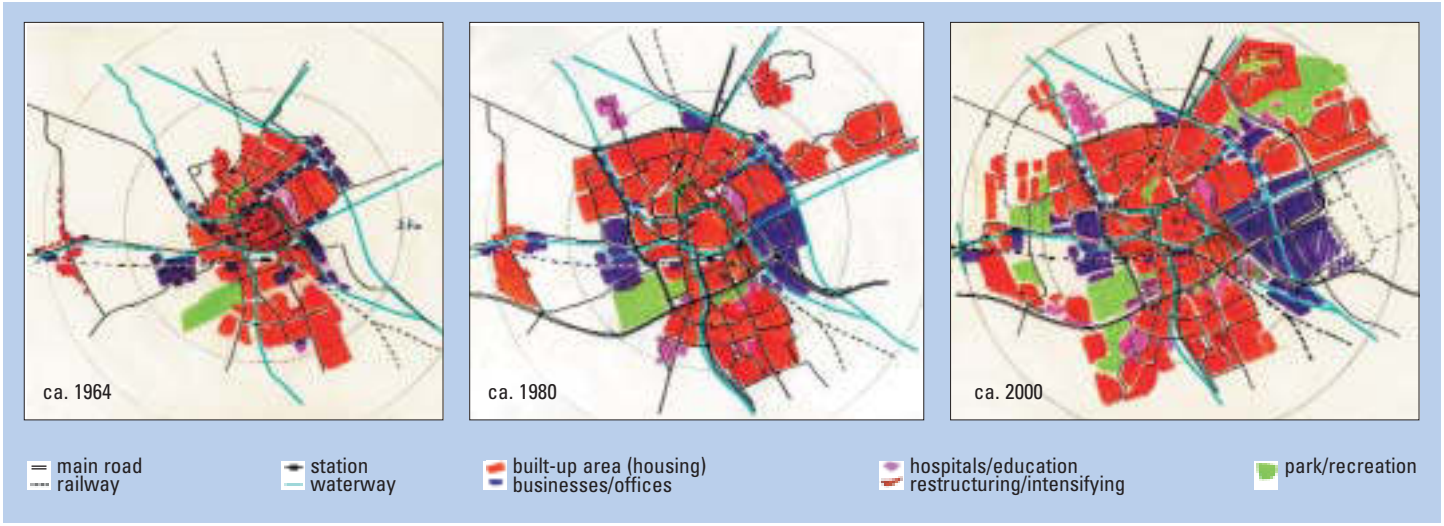
From the '80s onwards, parking policy became an increasingly guiding policy instrument. Parking fees and maximum parking stays were introduced within a wide circle around the city centre. Between 1980 and 2000 the surface of the parking-fee area increased from 1.2 km^2 to 5 km^2. At present there are eleven parking garages, offering a total number of 3,600 places. Most garages charge € 1,50 per hour. Public transport is strongly promoted too, including a P+R Citybus system. Large P+R grounds are found in the Sontweg, Peizerweg and near the Kardinge transferium. From here you can take the P+R Citybus to the centre and back again, while parking is free. A bus return ticket is cheap at € 2.00, a rate unchanged since 1 January 2004 (a ride is possible at this rate in the presence of at least four other passengers). In 2004 over 1.3 million people made use of the Citybus.

Spatial policy

Around 1964 Groningen was the most densely-populated city in the Netherlands. So far the municipal boundaries had only allowed expansion close to the existing city. Parts of the city centre were relatively worn, impoverished. Business was oriented on waterways. Whether or not by force, policy was directed at living in a concentration in and around the city centre, partly because of the favourable influence this had on the transport balance. The city was given slightly more breathing-air when the municipal boundaries were enlarged in January 1969, following annexation of Hoogkerk and Noorddijk. From then onwards, expansions were subject to the chosen principle of 'jointed sectors': new residential quarters distanced from each other and from the city centre, each with their own centres and green lungs in between. In the early '70s the general picture showed a strong increase in population.
In Groningen this resulted in the construction of Vinkhuizen, a quarter with a fully urban perspective (including high-rise). On the south end of the city the construction of De Wijert-Zuid was started, a residential district for the more affluent. Generally speaking the amount of social housing realised is high within the new city expansions of the '70s.

Due to the combination of increases in urban scale and housing dilution, a nation-wide trend, the picture of a compact city had disappeared around 1980. Yet, policy has continued to be directed at attracting major economic and social provisions to the city centre and its environment. The Alpha university faculty for instance concentrated in the city centre, and the university hospital remained, renovated and expanded here.

Picture 3. Spatial structure around 1964, 1980 and 2000



While large extensions were being realised, the population of the city of Groningen stabilised in the '70s and '80s. First and foremost this was due to the decline in birth rates; a decline which was far greater in Groningen than in the rest of the Netherlands, because of over-representation of the 15-29 age group in the population (caused by an increasing influx of university students and students of higher professional education). Next, suburbanisation was high as a result of graduates who had found jobs elsewhere in the Netherlands on the one hand, and young families looking for more spacious accommodation on the other hand. A new increase in population occurred in the '90s. This was due to provincial policy, which gave fewer suburbanisation possibilities, and due to the fact that the municipality of Groningen stepped up its housing construction for young families.
As a result of the high expectations regarding population growth, a fully new city quarter, Noorddijk, was planned for 60,000 inhabitants. Because of changed views, only Lewenborg and Beijum were realised in the end; quarters intended as an alternative to suburbanisation centres. These were followed by the Hoornse Meer, a quarter characterised by a mixture of social and non-subsidised housing. The adjacent new residential quarter Hoornsepark was reserved for owner-occupied housing. Next, the green strips between Lewenborg and Beijum were used for the realisation of the Ulgersmaborg and Hunze quarters. Finally, during the past two decades, minor quarters like Klein Martijn, Ruischerwaard, Drielanden, De Held, Gravenburg, Ruskenveen, Kranenburg, Piccardthof, Reitdiep and Van Starkenborg were developed.

Apart from what turned out to be a fairly limited expansion from the '80 onwards, spatial policy in Groningen re-focused on a compact city. With businesses shifting away from the city centre and its surroundings to new estates, not oriented purely on water but also on transport by road, new space became vacant in and around the centre for housing and office accommodation, and service and office functions increased considerably here. Large-scale retail facilities were realised adjoining the city centre (Westerhaven) and its immediate sphere of influence (the IKEA location). Outside the city centre the municipality opted for a relatively small-scale expansion model, the so-called extension model, which provided greater flexibility than the development of large, new residential quarters. This also allowed optimal use of existing infrastructure and facilities like district shopping centres and made a high building density possible. Concentration of high-value facilities of various types contributed to the reinforcement of the central position of the city within the region and to restriction of suburbanisation.

Bicycle parking; successful for 25 years

The motive used in 1982 to open Groningen's first surveyed bicycle parking facility was to give people a chance to get working experience. The Stichting Werkprojecten, a foundation for work projects, wished to give opportunities to young people who had been in breach of the law and had difficulties finding a job. Working experience would give them better job prospects. This would remain the most important motive for the next ten years to come. It all started with a guarded bicycle parking facility near a recreation pool, followed by four more of these facilities in the city centre a few years later.

Map 3. Bicycle parking in Groningen city centre: five guarded parkings

Halfway the '90s there were twenty bicycle parking facilities and a mobile bicycle parking for the two weekly market days and events. By 2006 this number has risen to thirty guarded bicycle parking facilities. Not only is the municipality now a major employer in this respect, also secondary schools possess their own bicycle parking facilities for pupils. This increase is caused by the changed roles of the bicycle parking organisation and the municipality. The above Stichting Werkprojecten has developed into a professional, customer-directed organisation with a highly varied service package, adapted to the location concerned. There are bicycle parking facilities in the city centre equipped with for instance lockers and children's buggies, while wheelchairs are on loan in other places. You can even hire complete bicycle racks and manager cubicles. Other bicycle parking facilities also offer repairs or (carrier) bicycles for hire, while the recreation pool even has deckchairs for hire. The municipality itself considered bicycle parking facilities as part of its traffic policy: promoting bicycle use, less theft and quality improvement of the public space. The municipality is also aware of the future clientele of public bicycle parking facilities. The first school bicycle parking was opened ten years ago. By now there are fifteen schools with surveyed bicycle parking. Students only pay € 22.50 per year, discount included. "This is how education works," says Cor van der Klaauw of the municipality of Groningen. "If you have a good bicycle you put it in a surveyed bicycle parking. With their subscription students can also park near the library or cinema. Perfect solution."

The success of the Groningen bicycle parking facilities lies in the subscriptions, an estimated 10,000. An annual subscription for twenty-five city bicycle parking locations costs € 25; a day card € 0.90. A subscription therefore pays itself back because there are so many different facilities equipped with a bicycle parking. Their annual income - € 250,000 - is largely cost-covering.

Around 2000 the spatial structure is characterised by a high degree of condensation. The outer contours of the city of 1980 have been maintained. One of the results is that most destinations within the city remain well within bicycle reach, even though the present average moving distance will undoubtedly be higher than in the '60s because of the high decline in population density in residential quarters from then on. Apparently its effects have been compensated by a suitable (bicycle) traffic policy aimed to make bicycle use more attractive, for instance by the construction of high-value through routes for cyclists - not for car drivers - to and from areas remote from the city centre.

Continuous exchange between fields of policy

Ever since the early '70s this focus on a compact city has been the red line of spatial and traffic policy in the municipality of Groningen, at executive as well as official levels. During an interview, Niek Verdonk, former director of the municipal department of city development, construction and living once observed: "Coincidence, aptitude and good luck are not the only, and certainly not the first success factors of the spatial shaping of Groningen. It rather is passion; a basic attitude sometimes labelled as obstinate by discussion partners during verbal contest about right and wrong in housing construction. It is this attitude that is the basis of spatial planning in the city of Groningen."

The fact that this line could be followed so persistently cannot be seen as separate from the political and executive dominance of socio-democracy in Groningen since the early '70s. Sharp contrasts had arisen between left-wing and right-wing political parties, focusing themselves on urban problems. The left-wing PvdA labour party won the council elections in 1974, after which a left majority executive was formed, bringing a thought revolution: from plans for wide traffic breakthroughs and housing demolition to a liveable small-scale city centre focused on residential and meeting functions. Maarten 't Hart, traffic counsellor in Groningen at the time, used to talk about 'the living-room function of the city centre'. The PvdA-party would from then on remain the dominant party in the city council for decades to come, continuously in charge of Spatial Planning and Housing, and also Traffic during the first period. It was this political continuity that ensured political consistency in spite of repeated rough weather and ever-recurring, fierce discussions, both within the council and with interest organisations and the population.

Where city centre policy and traffic policy are continuously characterised by fierce political struggle, cycling policy has always enjoyed a council-wide basis in Groningen. This is still the

Table 3. 2004 survey among passers-by in Groningen city centre; shares of the main modes of transport in the number of visitors and realised turnovers (in %)

	share in visitors				share in turnovers			
	walking	**bycicle**	**public transport**	**car**	**walking**	**bycicle**	**public transport**	**car**
local visitors	32%	46%	13%	9%	19%	56%	14%	25%
regional visitors	1%	22%	41%	36%	0%	21%	32%	40%
superregional visitor	5%	7%	48%	39%	4%	5%	39%	37%
total	**20%**	**31%**	**27%**	**21%**	**11%**	**34%**	**25%**	**35%**

Table 3 shows the profit that the Groningen city centre receives per individual mode of transport. In total, considering all visitors and its complete turnover, the bicycle is of major economic interest as well: 31% of visitors and 34% of the turnover. This obviously concerns mainly Groningen citizens: 46% of the citizens of Groningen goes to the city centre by bicycle, realising 56% of sales to citizens. Visitors from the region and further away in the Netherlands have a slight preference for public transport than for their cars, but visitors who come by car spend far larger amounts.
Source: Goudappel Coffeng, Detailhandelsmonitor 2004 Gemeente Groningen, January 2005.

case right now, even where it concerns making budgets available. Successive socio-liberal aldermen have also put in a great effort toward bicycle traffic and the present liberal alderman still continues on this track. The Groningen civil service for all its continuity has surely contributed to the consequent preparation and implementation of this policy. Policy-making officials already present in the '70s and '80s have so far held a position within the civil service organisation. By the end of the '80s the departments of Urban Construction and Traffic were joined together within this organisation, resulting in a direct, material relation between both areas of policy. Its ensuing interdisciplinary influence has without any doubt contributed to the quality of design, covering structure plans right through to concrete facilities.

The Groningen success story explained

Groningen is considered one of the foremost cycling cities, bot inside and outside the Netherlands. It sets an example to other cities as regards bicycle climate and bicycle use. Although these two aspects already are closely interrelated, there is more. There are also clear relations with the overall living and working climate in the city, with the population build-up, with the significance this city has for its surrounding 'Ommelanden' district and so on. In short: coherence, but infused by policy and continuity. The present situation in Groningen was not born just by itself, nor did this happen in just a day.

Choices were made, made by man. This involved struggle, on and off, to be able to follow the lines that had been set. All this took time, and so did the implementation of all kinds of plans. Coherence, continuity and policy; they recur time and time again, making it possible to put the finger on what it is that makes Groningen such a pure cycling city. Naturally there are also conditions that more or less autonomously explain a part of this high level of bicycle use. The population for instance only slightly increased over the past forty years, allowing the city to retain its compactness and resulting in stretches that on the whole remained within cycling distance. Another aspect is the great representation of students in the city.

Still, apart from such conditions, autonomous as they are, there is especially policy:

- Groningen conducts a broad cycling policy. 'Broad' here implies: attention to lay-out, management and maintenance of a bicycle traffic infrastructure, (indoor) bicycle parking facilities, combating bicycle theft, traffic and social safety and relation to public transport. This policy has been conducted with an open eye for thirty, forty years, and with funds and budgets available.
- Cycling in Groningen is also attractive because cycling policy is part of overall transport and traffic policy. This implies that politics made choices in the desired (living, working, shopping and recreational) functions of areas within the city and in the ways of moving within, to and from these areas. Imposing restrictions on car use - persistently - depending on place and time, and through parking policy, surely contributes to the preferential position of the bicycle for many of the trips made by the citizens of Groningen. In this way an integral transport and traffic policy improves the effectiveness of cycling policy. Not just for the city centre, but for the whole city (consider for instance traffic circulation in the other quarters).
- Spatial policy directed at a compact city implies many accessible activities for citizens, well within cycling distance. This municipal policy was built in two or three decades, persistently and with a clear vision, but also with an open mind to new developments.

To an important degree spatial policy determines the size and location of traffic flows in and around the city and the possibility to choose among various modes of transport. As a result, spatial policy is a precondition of cycling policy.

Policy, therefore, is the very essence of things. But policy is made by man. The fact that some politicians and officials did timely anticipate the spirit of the day may be a matter of good luck or coincidence, but is also commanded from time to time. For instance by a clear vision, persistence and confidence in one's own policy, but also when facing resistance from people or developers. Surely it is no coincidence that the municipal organisation has been functioning in a consistent and coherent way in these matters. And consciously too, on the part of politics as well as the organisation itself. In short, an integral policy with a long breath works for Groningen. And for bicycle use as well.

3. Amsterdam: many people, many cyclists, much policy

Amsterdam: capital city and in many respects also exceptional city in the Netherlands. Certainly where it concerns bicycle use and everything connected (theft included). Leading city in many aspects of cycling policy. Fietsverkeer magazine often wrote about Amsterdam affairs. This chapter is a compilation. It opens with facts about bicycle use in Amsterdam, followed by an assessment of Amsterdam traffic policy until 2000. And there are interviews with three persons who have embodied Amsterdam policy in the last few years: officials Joep Huffener and Ria Hilhorst and alderman Mark van der Horst. The chapter is completed by the new 2006-2010 bicycle plan.

Cycling; disregarding age, income, quarter or ethnic background

A survey held among a few thousand Amsterdam citizens demonstrates that cycling has a good name in the Dutch capital. 77% of Amsterdam citizens aged twelve and older has at least one bicycle ready for use. 50% of them make daily use of the bicycle, 28% a few times per week and 8% weekly. A number of things are striking here:

- Bicycle owners are found all over the city, the largest relative proportion is found in the centre of Amsterdam (85%) and the smallest in the South-East (70%).
- Bicycle ownership is highest among native Amsterdam citizens (85%) and lowest among citizens of Moroccan (54%) origin. Surinam (57%), Turkish (64%) and Antillean (64%) rank slightly higher.
- Bicycle ownership among young persons until 24 years is lower than among 24-65-year-old: 65% vs. 83%.
- 68% of the persons in households with monthly incomes lower than € 700 possess a bicycle. This is 89% for household incomes exceeding € 3,200.

Are these open doors? Only in part. The common denominator is that there are no really extreme variances among parts of the city, ethnic groups or age and income categories. Conclusion therefore is that bicycle ownership is fairly general for the entire population of Amsterdam.

Roughly 23% of the Amsterdam citizens has no bicycle. Part of them claim not being able to cycle. About 16% of those who can cycle were asked why they do not have one. Especially native Amsterdam citizens give (a combination of) three reasons: 'Not needing a bicycle', especially because a large city like Amsterdam offers good alternatives by way of public transport. So this is used more often, certainly when you 'don't like cycling' and claim that 'bicycles offer nothing in the way of comfort'. Immigrant citizens less often claim dangerous traffic and fear of bicycle theft; reasons that are important enough for their native counterparts to decide to make do without a bicycle.
Respondents were asked for their mode of transport to four different destinations: work or school (depending on their main occupation), shops for non-daily things and spare time. Table 4 shows the results for trips over estimated distances until 7.5 km. Estimates were made by the respondents.

Table 4. Choices for modes of transport for trips until 7.5 km and various trip motives, Amsterdam (in %)

	trip motive			
mode of transport	to work	to school or study	to shopping area	leisure
car	13	5	14	19
public tranport	15	47	21	20
cycling	55	33	39	33
walking	10	13	23	27
other	6	2	3	2
total	**100**	**100**	**100**	**100**
share < 7,5 km	49	69	80	69

Amsterdam citizens show a slightly higher bicycle use compared to the average citizen of the Netherlands, both for commuter and shopping traffic and spare time activities. Also, the public transport share in Amsterdam is far higher. We can therefore conclude that the bicycle 'grabs' its entire profit from the car. Undoubtedly this will be due to Amsterdam's strict parking policy. For each of the four trip motives put forward, more than half (55%) of the cyclists state as main reason that their bicycle brings them to their destination faster!

Source: O+S, the Amsterdam Bureau for Research and Statistics, Amsterdam op de fiets!, September 2003.

Top-form pupils more often go on foot, but why?

Amsterdam children in the three top forms of primary school far more often go to school on foot than by bicycle. Very few of them are brought to school by car or use public transport. This last-named aspect is well in line with the picture in the Netherlands; the first - walking much rather than cycling - is more exceptional.

Table 5. Mode of transport home-school of pupils of 14 primary schools in Amsterdam, classes 6, 7 and 8 (in %)

	often	sometimes	never	total
walking	60	18	22	100
cycling	22	22	56	100
passenger on bike or moped	4	22	74	100
car passenger	9	36	56	100
by public transport	6	8	86	100

The reason that these pupils walk much more often than cycle to school is mainly that they live close by; an average distance of 700 m. More than one-fourth even lives within the 300 m range. So bicycles are simply not necessary here. Almost all children do have a bicycle and those who live slightly farther away will use it sooner. However, at distances of more than 1.5 km they will sooner use other modes of transport. Many children make intensive use of their bicycles outside school hours.

We often hear that immigrants cycle far less than native inhabitants of the Netherlands. This would be the reason that many children do not cycle to school in large cities. In time this would have an adverse effect on overall bicycle use. Do studies demonstrate this as well? The status of the bicycle in Amsterdam does not give much proof of differences existing between children with native or foreign backgrounds. The share of bicycles found in both groups is nearly the same and so is cycling ability. Children are also equally proud of their bicycles and equally fond of cycling. What indeed appears is that children of newcomers (in the same way as their parents) are in some respects more negative in their attitudes toward bicycle use. And indeed they cycle to school less frequently: 70% of immigrant pupils never go by bicycle versus 47% of native children. The reasons they give are mainly subjective: walking is preferred, or the bus, or not being in the mood. The first and foremost reason given by native children is that walking to school is easy because school is so close by. This reason is less often heard among children with foreign backgrounds. Especially these children walk to school more often: 80% of all Moroccan children always goes on foot, the same goes for 71% of the Turkish, 63% of the Surinam and 52% of native children. Regioplan research agency attributes the fact that immigrant children walk much more often than cycle to school partly to cultural differences: as many of their parents do not (cannot) cycle, cycling abilities are less obvious to these children. Another important explanation put forward is that many immigrant children are either at city centre schools in the immediate vicinity - so within walking distance - or at schools with a specifically religious background, too far away from home and not within cycling distance. Their parents often bring them to school in these cases.

Source: Regioplan, Kind and fiets: een onderzoek naar het gebruik van de fiets door Amsterdamse basisscholen, Amsterdam, March 2001.

Assessment of 1990-2000 traffic and transport policy

Starting-point for Amsterdam transport and traffic policy is the 1993 Regional Transport and Traffic Plan (RVVP) . Its main objective was to discourage car use - which was not a taboo at the time - and to promote public transport.

By far most of all trips from home made by Amsterdam citizens remain within Amsterdam: 93% in 1986-1991 and 91% in 1998-2000. These are exceptionally high percentages. Nearly 30% of all trips is made on foot. For other modes of transport, see the modal split development in Table 6.

Table 6. Development of the modal split of Amsterdam citizens, 1986-2000 (in %)

mode of transport	1986 - 1991	1994 - 1997	1998 - 2002
public transport	27	25	24
car driver	32	33	32
car passenger	10	8	8
bicycle (incl. moped)	31	34	36
total	**100**	**100**	**100**

Source: municipality of Amsterdam

Bicycle use has increased, especially among residents of the city centre and the old city. Especially public transport users have switched over to bicycles.

Whereas Amsterdam citizens do not often leave the city, many people from outside come to the city for purposes like working, shopping or studying, to name a few. These visitors make up for a major part of the traffic picture, certainly by day. Each year Amsterdam citizens and visitors together are counted in over two hundred fixed counting-points between 15.00 and 18.00 hrs. It concerns the number of passages by way of the Singelgracht at the edge of the city centre, a beltway around the old city and also around the full agglomerate. Table 7 demonstrates the very dominant position taken up by car traffic, certainly outside the city centre.

Table 7. Number of car and bicycle passages on an average working day between 15.00 and 18.00 hrs, 1998-2000, and the development of the number of passages during 1986-2000 (in %)

	number of passages 1998 - 2000				development 1986 - 2000 (%)			
	into the city		out of the city		into the city		out of the city	
kordon	car	bicycle	car	bicycle	car	bicycle	car	bicycle
Singelgracht	26.400	15.900	30.200	18.100	-19	+20	-20	+9
Old City	58.200	11.300	61.400	10.500	-1	+11	-11	+11
agglomeration boundary	83.300	2.300	113.300	3.500	+35	-8	+21	-12

What also appears is that bicycle traffic in the Singelgracht and on the beltway surrounding the old city has won grounds, while car traffic lost grounds here. The agglomerate boundary shows exactly the opposite picture. Apart from bicycle and car, public transport showed a varied picture between 1995 and 1999. The number of public transport users (a daily average of 650,000 in 1995) slightly increased due to a considerable rise in underground and high-speed tram use and an almost equal decline in tram and bus use. In this same period, the number of boarding and descending train travellers rose by 20% until roughly 250,000 per average working day in 1999/2000.

Parking policy is a major factor in active car use discouragement policy. By now almost the complete city area encircled by the ring road is under a (paid) parking regime. Its effects are particularly noticeable in the city centre, where parking charges have been common already since the early '90s. Car traffic from and to the city centre has declined and there are considerably more bicycle trips. The number of visitors who come to the city by car fell by roughly 15% over the past few years.

Table 8. Number of traffic victims in Amsterdam, relating to mode of transport, 1984-2000 (in %)

	1984 -	1989 -	1994 -	1998 - 2000		Netherlands 1998 - 2000	
mode of transport	**1986**	**1991**	**1996**	**number**	**% of 84-86**	**number**	**% of 84-86**
pedestrians	663	646	460	400	-40%	8.254	-37%
cyclists	925	889	833	696	-25%	32.278	-15%
moped riders	645	613	532	508	-21%	31.794	-9%
motor vehicles							
drivers+passengers	1.433	1.363	1.490	1.421	-1%	77.087	+14%
total	**3.666**	**3.511**	**3.315**	**3.025**	**-17,5%**	**149.413**	**-3%**

Source for data Netherlands: ww.swov.nl/cognos

Outsiders might be inclined to say that cycling surely must be dangerous in such a busy city. For the outsider this might be the case; for Amsterdam citizens the situation appears not to be too serious, although of course even one traffic victim is one too many.
See Table 8: 696 casualties among cyclists (six killed) during 1998-2000.
This is exactly 25% below the numbers in the period between 1984-1986. Which shows once more that an increase in bicycle use in the Netherlands can indeed coincide with a decline in the number of casualties among cyclists.

Source: Municipality of Amsterdam, Amsterdam en mobiliteit: effecten van verkeer- en vervoerbeleid 1990-2000, Amsterdam, March 2003.

The stories of the policy makers

When **Joep Huffener** took up his position as bicycle coordinator (until 2004) this was a virtually new function for Amsterdam. As such it involved a great amount of pioneer's work. "The city sectors had just been shaped and a central cycling policy was called for in accordance with the *Meerjarenplan Fiets*. Promoting bicycle use, for instance by making it safer. Through the years you discover that about 90 - 95% of what you can do has actually happened. The remaining 5% that still awaits completion is also hardest to achieve because most of the time it costs lots of time and money, at little returns. It also involves a lot of repetition, project realisation and management; fewer new things to tackle."

What is the most important role of the bicycle coordinator? "Ensuring that cycling policy is an integral policy. De Fietsersbond cyclists' union very often disagreed with me, as an integral policy often requires long-term thinking and planning, whereas the cyclists' union usually wants instant solutions to for instance a *black spot*, or wants to construct a cycle path right now. An additional problem of making good cycling policy is of course this system of city sectors, for instance for the Hoofdnet Fiets bicycle network. Although this network indeed had a legal basis, the dIVV (Department for Transport and Traffic Infrastructure) had no say whatsoever in these city sectors. In practice you were forced to hold a plea for the construction of a cycle path on the basis of your blue eyes and connections, roughly like this: we have the money bag, so what if you just start spading the ground and give us the missing link?"
Any successful projects? "Now I am inclined to name lots of smaller facts, relating for instance to transport management and chain mobility. I thought up Park & Bike; a concept that works and which is now copied outside Amsterdam as well. Lots of district bicycle parking facilities were restored and seven destination bicycle parking facilities have been realised. And there are two pilots with automatic bicycle parking facilities which are really functioning well.
In my view there is a future for automatic parking for rented and private bicycles.
Unfortunately, the Kernnet Fiets bicycle network, complete with safe and comfortable cycle paths in specifically coloured tarmac, has not been realised. Everyone concerned was enthusiastic, the city sectors, the environmental departments; there even seemed to be agreement on the funding aspect. But the alderman in support of the entire project stepped down and

his successor swept the plan off the table. Still, many fine cycling routes have been realised over the years and cycling shares in Amsterdam are large. Only in the city centre - where cycling trips are most frequent - facilities and maintenance are lagging behind when compared to the rest of the city."

The Dienst Infrastructuur Verkeer en Vervoer (Department for Transport and Traffic Infrastructure) (dIVV, 375 staff) plays a main part in promoting bicycle use. **Ria Hilhorst** works in the Strategy and Policy Unit of dIVV (60 staff). Her very diverse jobs present a picture of the various bicycle issues in Amsterdam. Take for instance the Hoofdnet Fiets bicycle network. The dIVV shapes this network in consultation with the Amsterdam city sectors. These fourteen city sectors themselves implement their own cycling policy, resulting in different budgets for the construction and maintenance of cycle paths and bridges. This weakens the coherence of the bicycle network. The municipality is now considering putting the main cycling routes under the responsibility of the central city, which would imply the possibility of quality requirements as well. Hilhorst is also involved in the realisation of a general Communicatieplan Fiets cycling communication plan and a marketing plan for the new municipal bicycle parking organisation which has been active since 2001. The purpose of this plan is twofold: realising more bicycle parking facilities and increasing the use of surveyed bicycle parking facilities. Other activities concern the completion of the *Hoofdnet Fiets policy document* and preparation of the *Jaarplan Fiets* annual bicycle plan, and also activities that are less firmly based on policy. For instance responding to the questions, suggestions and complaints received via the www.fiets.amsterdam.nl site. If necessary she passes them on to the city sectors. She also handles requests of - mainly foreign - delegations asking to explain Amsterdam cycling policy.
Ria Hilhorst spends a lot of time on meetings within important cycling consultation bodies like the dIVV, on agreement consultation with the city sectors and consultation within the Urban Bicycle Platform, in which the dIVV, DRO (the Spatial Development Department) and the Cyclists' Union keep each other informed on cycling policy. Right now the focus is mainly on development of the Amsterdam structure plan, bicycle parking facilities and dangerous situations. The relationship with the DRO is important for its policy implementation. This is where the traffic design experts are found. Hilhorst has her own 'bicycle contact person' in the DRO and also in the administrative department. She also consults and advises on the position of the bicycle within urban projects and promotes bicycle interests in the IJburg, Zuidas and Amsterdam CS projects.

Alderman **Mark van der Horst** (VVD) would name deeds rather than words: "Mobility is high already, and expectations are that it will rise even more sharply. Also, optimum use must be made of each modality. Here we see a breach with the past: no longer do I wish to obstruct car use. On the other hand I do realise that we simply must not have too many cars. Therefore: the more people on bicycles, the easier it will be for the other modalities. I admit that bicycles are no issue in our executive agreement. This is because to us bicycles are no political thrill. With left-wing parties in the municipal executive, this would obviously be an issue for a policy document. What it comes down to in the end is your choice of words, considering your party's rank and file. But it does not imply that we do not consider cycling; on the contrary. From our present budget you will see that this is the first in a long series of years that more money - over 4.3 million euros - is being allocated for bicycles than in the preceding periods of left-wing constitutions."
"One of this city's main curses had always been that we were great policy makers. I just need to open one cupboard here and the reports will come tumbling down all over the floor. We can now start implementing all plans. There is money enough. Implementation however

is what I am worrying about. You just cannot open roads everywhere at the same time. Sometimes you are suddenly faced with restricted capacity; sometimes you must wait for something else to pass by before hopping on. There surely is enough knowledge, money and organisation, but our next hurdle ahead is actual implementation."

"In the structure plan there will be a new bicycle network on an urban level (Hoofdnet Fiets) and on a city sector level. We will among other things have to consider how to introduce more traffic segregation here. Right now we want to just pump all traffic through one and the same street. Convenient car routes through the city are often automatically transformed into bicycle routes while other routes would be much more suitable. An example: when cycling from Amsterdam-West to the Leidseplein, please do not go by way of the Overtoom, but take Vondelpark instead. So adapt your bicycle route here. We now have a separate bicycle bridge from West to Vondelpark and you must lure your cyclists into using this route. I do realise however that this is an idealised picture. You just cannot unravel everything in a busy city like ours."

Choosing for cyclists: The 2006-2010 bicycle policy plan

Seven spearheads can be distinguished in the new long-term plan that appeared by the end of 2005. Their order of priority occasionally is striking:

1. Realising more and better bicycle parking facilities. To give more structure to the policy, attempts are made by the municipality to lay down a so-called 'bicycle parking consideration frame' including general observations on how and where to realise, manage and run parking facilities. Another thing required is capacity enlargement near houses in older city quarters, near public venues, near railway stations and more generally in 'Locker', the urban bicycle parking network. For the next five years to come the required budget is estimated at € 37 million; funds must be made available by subsidies of the regional authority (€ 2.5 million), city sectors (€ 1 million), the municipal mobility fund (€ 18.5 million), the municipality's own funds (€ 2.6 million) and specific funding of the most expensive underground bicycle parking facilities.
2. Persistently combating bicycle theft. Continuation of the close cooperation between the municipality, police and the justice department and continuation of the main activities: registration, enforcement, mounting tags, registration checks and so on. Costs: ca. € 5 million in five years.
3. Constructing the missing links in the Hoofdnet Fiets bicycle network. Realisation of most of these will be possible before 2010, so completion is not far off.
4. Promoting traffic safety for cyclists. Black spots and red routes must be persistently tackled, in addition to "Duurzaam Veilig", the sustainable safety policy. These measures must be funded by way of the 2006-2010 traffic safety policy plan.
5. Proper management and maintenance of the Hoofdnet Fiets bicycle network.
6. Reinforcing 'weak links' in the Hoofdnet Fiets bicycle network. For instance construction of separate cycle paths instead of integrated cycle lanes.
7. Formulating and implementing a communication strategy directed to specific target groups and themes. The emphasis must be on groups that cycle less frequently, especially young people. Costs: € 600,000.

The three spearheads of the Hoofdnet Fiets bicycle network will cost an estimated € 53 million in five years. The three most expensive projects (missing links in the form of bridges and tunnels) make up for as much as € 21.5 million. Funding must largely come from regional subsidies (ca. € 25 million), contributions from city sectors (€ 10 million), the municipal Mobility Fund (€ 5.5 million) and € 5 million via the central city's own budget. In this way, the assumed total spendings including organisation expenses will be over € 100 million in five years for Amsterdam cycling policy - excluding specific traffic safety projects.

4. Enschede: cycling policy by way of the car

The traffic policy of Enschede is a direct result of the spatial and socio-economic blow the city suffered due to the disappearance of the textile industry in the nineteen sixties. Dick Buursink, former social democrat alderman of Enschede and chairman of "Fietsberaad" looks back. How to be occupied mainly with car traffic and socio-economic developments and still having cyclists' interests in mind. And he would not be Buursink if he did not look forward just for once.

"I was born and bred in Enschede." **Dick Buursink** does not like woolly words of welcome and would rather come straight to the point. We have come to Enschede by train on a sunny, cold Friday morning and Buursink is waiting to usher us along to the station restaurant, where he unfolds a city plan. "I have experienced the huge changes this city has had to endure." Marking out large sections around the heart of the city he continues: "All this is where the textile plants once stood."

Textile city

At the beginning of the twentieth century the appearance of the textile industry transformed Enschede from an agricultural into an industrial centre. In those days the city consisted of a small centre surrounded by textile plants mainly located along the railway tracks, with working-class areas in between. In the city's heydays there were ca. 25 large textile plants, including well-known names like Van Heek, Jannink and Ten Cate. The flourishing period of Enschede as a textile city formed the background of Dick Buursink)s younger years. These were followed by the closure of all factories by the end of the '60s. His father worked for Holland, the first main textile plant to close its gates, in 1967. Roughly 23,000 direct jobs got lost on a population of just under 140,000 in these years. As all these factories had been located in fairly central positions - after all, the city only started expanding with the growth of the textile industry - the city now presented a view of having been bombed. Enschede had been transformed into a desolate waste and lots of people found themselves in trouble. The city has ever since been fighting its way out of this spatial and socio-economic blow. Naturally, this affected municipal traffic policy as well.

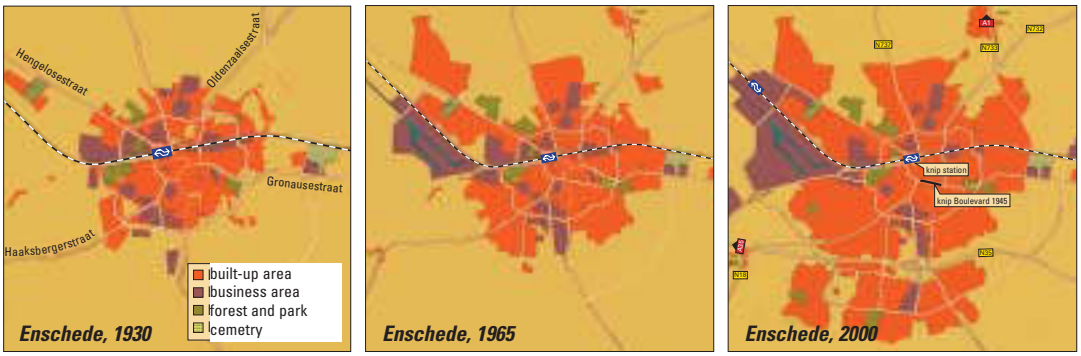
Rings and radials

After his historic account Buursink returns to his city plan. This shows a kind of spider's web, with two rings clearly visible around the city centre. The inner ring is the so-called centre ring. Buursink: "Car traffic would soon disappear within this ring. Back in 1975, Enschede was the first city to choose for a pedestrian precinct and a number of streets had been made car-free, including the Oude Markt. This was a first step."

The outer ring is the so-called Singelring ("boulevard ring"). It was realised already in the '30s under burgomaster Edo Bergsma, who also happened to be President of the Dutch Automobile Association and as such apparently had a clearer vision than usual at the time. The Singelring more or less was the city boundary at the time. Radials cross this ring from all directions; most of them named after their place of destination: Hengelosestraat, Oldenzaalsestraat, Gronausestraat, Haaksbergerstraat. "Increasingly," Buursink explains, "these

radials brought through traffic within the Singelring. So in my view the second step was obvious: reserving the centre ring for destination traffic and barring through traffic from the Singelring area. The Station Square you see here, located at the north end of the centre ring, is a fine example of this. Not so very long ago southbound through traffic just passed this place." What we now see is an ultra-modern, fully-dressed square only accessible to buses heading for their stops and to cyclists on their ways. Buursink cannot help chuckling softly that he has not succeeded in making a perfect implementation: "Although the layout of this square recently won a prestigious prize, there are massively complaints. Take this covering for instance; it may be very avant-garde but it will not keep you dry in a fresh gale."

Map 4, 5 and 6. Enschede in 1930, 1965 and 2000.



maps: Erwin Scholten

Debate with the community

Dick Buursink is a real political animal. At the early age of 26 (1978) he joined the social democrats in the city council. He has been involved in traffic ever since 1986, when in addition to his position as party chairman he also joined the Spatial Planning and Traffic Committee. But his finest hour obviously started when he became alderman in 1994 and was invited to realise his traffic vision. Doing so, he introduced the above 'cut' near the railway station, followed by a similar cut in the Boulevard 1945, putting an end to east-west through traffic south of the centre ring. For the fresh alderman however, winning the general public over to these radical measures was not an easy thing to do. "Whether on purpose or not", says Buursink in a suddenly fanatic tone, "I have always conducted this discussion with the community in a provocative, tough way. In plain words: if we do nothing right now we will see a total blockade of this city within five or ten years. Of course I always supported my views by way of figures. My approach was as practical as possible, translating quantities of parked cars into football field surfaces. Capacity computations of road crossings. They could not put in a word edgeways. I explained in my very best way possible that we had to choose for the bicycle if we wanted to keep the traffic problem at least manageable. Each cyclist creates room for a car. I had the newspaper take my picture, squeezed in between two cars and hands up high: now what to do? The result was that a part of the population got a red mist before their eyes. Letters to the editor, week-in-week-out." He has to admit that this was indeed hard on the citizens of Enschede. After all, he had been the one had who sold his car way back in 1989: "Too expensive for only limited comfort." So it was easy to push this fervent socio-democrat cyclist into an ideological corner; he just abhorred cars.
Be it as it may, he went on persistently, organising public debates, sometimes including guest experts as well. Buursink: "Awareness, awareness, awareness; that was what drove me. The final result was that the council accepted the 1998-2015 mobility plan, involving 35 actions for implementation and the radical cutting measures named above. The only thing still left to do is to tackle the north-south through route west of the centre ring, so De Ruyterlaan-Ripperdastraat. If I had my say we could for instance introduce a one-way section here. But this is no longer for me to decide ..." Buursink stepped down as alderman in 2001 due to the 2000 fireworks disaster of Enschede.

On your bikes

Now for some traffic practice. Unlike anyone else Buursink is aware that words and plans alone are too theoretical and just will not be convincing. For this reason he ushers us to the

railway bicycle parking facility from where public transport cycling is arranged. Not surprisingly, our very first ride takes us to De Ruyterlaan-Ripperdastraat; certainly busy streets considering the time of day. It is the end of a very common, sunny Friday morning. "I don't know if the present alderman will go for a drastic approach here. I did write a draft containing recommendations to a few council members, in which I advocate the possibility of taking one step further in the centre ring. You could for instance convert it into a pure parking ring. Especially car drivers from up north now take this ring when searching for a suitable parking place, but they really should be directed straight to the parking garage near 'their' approach road. Was my successor angry when reading my draft? No, not really; he even asked me for a copy. Still, will he ever risk his neck? What I always say is: any alderman who wishes to be friends with everybody will only make enemies."
So we are pedalling along, past a few restored premises of the large 'Van Heek' to form some kind of picture of what the textile city of Enschede once must have looked like. In passing, Buursink points at the railway line to Gronau, Munster and Dortmund with some pride. The fact that Germany has become accessible by rail again since the end of 2001 can partly be put to his account. Our next stop is the Singelring, more specifically the boulevard crossing between Oldenzaalsestraat/ Lasonderboulevard. Four-direction green for cyclists here, but what is more important is that the consequences of his traffic policy are obvious in this place, because the boulevard ring is very busy indeed.

No double lanes

To take the load off the busy Singelring Buursink at the time opted for luring Singelring traffic one more layer outward via ring road structures well-removed from the city. In this respect he has been successful in the south-west end (Usseler ring road, Westwal fly-over), the south end (A35/N35 with sufficient capacity, also around junctions) and the south-east end (Oostweg and Euregioweg; N35 extension planned until the German autobahn past Gronau). In the north however, this was impossible; nor is it ever likely to be, due to a badly situated exit, residential quarters and environmental values. The result of all this is that the second economic centre next to the heart of the city (university zone, business science park and football stadium in the west) are not properly linked on to the A1, and that all busy traffic north of the city will remain being crammed into the Singelring. However, those who halt their bicycles in the Lasonderboulevard will instantly see that Buursink once had an alternative here as well. Instead of 'a third ring' he could in fact have opted for a renewed layout of the boulevards; certainly here in Enschede, where boulevards already offer enough space. Why then no boulevard including two double lanes? If the trees in the centre had been removed and the pavements had been narrowed down a bit, this would have been a easy option. Buursink: "But this would have forced cyclists to get off, which was no option. After all, our city's main infrastructure does not only belong to cars, it is everybody's. Our boulevards are major connections to and from school. Telling these cyclists to take illogical routes via residential areas will have no follow-up in this case."

Though all this sounds obvious, it remains funny when you consider a car-less alderman that should not be bothered, apparently, that in the situation desired by him the boulevards only have cycle lanes used for parking places; no perfect cycle paths. On the other hand this does not mean that the boulevards are dangerous to cyclists, because car flows are segregated by way of central reserves and they can use spacious lanes.

A flourishing service city

Our long stay in the Lasonderboulevard has made us cold and hungry. We cycle down some more boulevards before arriving at a sandwich bar. Some doubts remain. How is it possible that Buursink managed to withstand this struggle for boulevard widening; something so obvious? All the time he had taken a fairly tough stance, maybe because this was a relatively late issue for Enschede. Twenty years earlier no-one would have complained about the necessity of cutting down fine trees, but in the late '90s such a thing was not done. Also the fact that accessibility was not really felt a problem until the '90s never ceases to surprise us. All this surely must have happened somewhere else, a long time ago? This requires another bit of historical context from Buursink: "After the disappearance of the textile industry, a small, active professional workforce remained. A large part of the 45+ age group was instantly discarded in the '70s and lots of people, often poorly educated, qualified for a disability benefit. It all took some time for the active workforce to regain its normal size. Our city gradually transformed itself from an industrial into a flourishing service city. We now have the high school and the university, numbering 12,000 and 6,000 students respectively. We offer employment in ICT and health care. Take for instance Medisch Spectrum Twente, this country's largest, non-university hospital and Roesing, a prominent rehabilitation centre including a research centre. All this brought about a shift in our workforce. People on a disability benefit gradually disappeared into the old-age pension category and we received many people from elsewhere searching employment here. In such a case you see a rise of prosperity in the city. Add to this the fact that, being the largest city in the east of the Netherlands, we saw our regional function becoming more and more prominent. This led to the arrival of a music centre, a theatre and a great variety of catering facilities. On Saturdays only we already welcome between 25,000 and 30,000 Germans to our shopping market. But as we said, our development has been somewhat slower than elsewhere and we are still lagging behind. We still have a large share of unemployed people; not large like for instance Rotterdam or Groningen, but cities like Amersfoort and Apeldoorn provide far more jobs than we do. Our population is now on the increase again. Due to the speed and obscurity of these developments we did not notice until the '90 that our city, too had started clogging up."

Lasonderboulevard near the Singelring

5. Zwolle: segregation, wherever necessary

Zwolle figures among the top cities of the Netherlands in respect of bicycle use and 'bicycle street climate'. This is clearly shown by the 2000 and 2002 "Fietsbalans" Cycling City of the Year nominations. What can explain all this? A discussion with the main actors: Willem Bosch, the face of cycling policy in Zwolle for almost fifteen years and Rutger Ekhart, transport and traffic policy consultant with the municipality.

"For decades we have been working towards giving a prominent place to cycling. This is a consistent policy; not belonging to the last few years only." To **Willem Bosch** it is more than clear: the success of Zwolle can primarily be explained by the structural, continuous improvement of facilities for cyclists. Simply making bicycle use more attractive, that's what it is. He is quick to add that this is undoubtedly a matter of mentality as well. Bicycle use certainly is not status-lifting within the Zwolle context, but it does not indicate poverty or any other deprivation either. To the citizens of Zwolle cycling is just part of the game and in this respect Bosch detects a difference with the west and also with a province like Noord-Brabant.

Spatial aspects

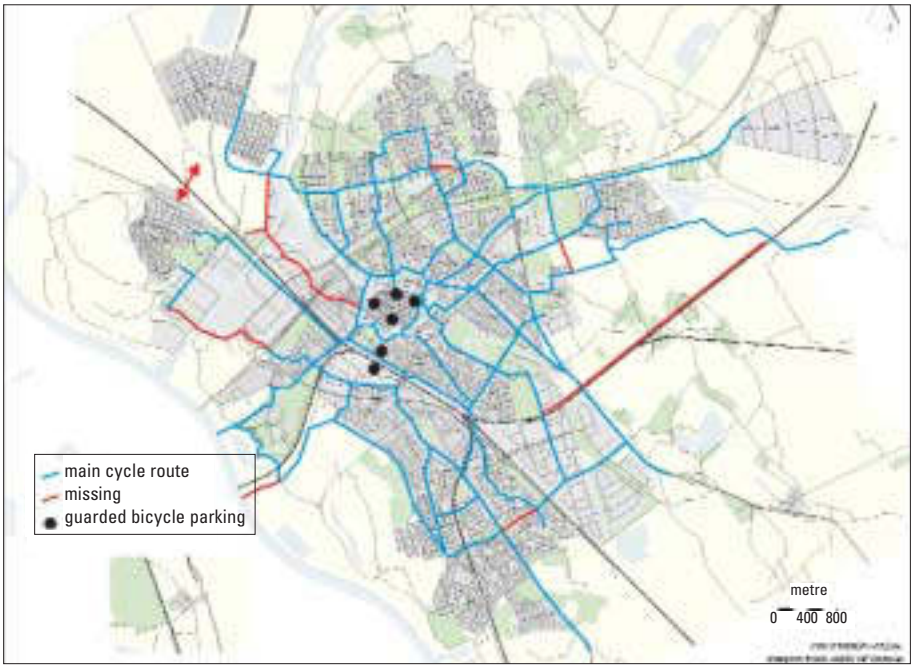
So: quality of bicycle facilities and something like 'population character'. Do these factors offer an explanation or can we add more? Spatial conditions for bicycle use in Zwolle surely do not appear very positive at first sight. Certainly, the compact, ancient city centre (700 by 500 metres within the Stadsgracht boundary) offer very few car accommodation possibilities, enhancing the position of bicycle trips to the city centre. Still, in spatial aspects this is undone by the function of the city centre and the not really compact city structure.

When comparing the 25 largest municipalities of the Netherlands (over 100,000 inhabitants) Zwolle would more or less seem your ideal city: a high percentage of children, a high appraisal of one's own house, little unemployment, a good business climate and many jobs. All this results in a top position (nr. 2) in the compound socio-economic index and more or less the same (nr. 3) in a compound indicator for economic vitality. And especially in this city with its socio-economic dynamics cycling ranks exceptionally high!

Source: Gemeente Zwolle, Vergelijk Zwolle: Zwolle in beeld 2004; zo scoort Zwolle binnen de 100.000+-gemeenten, 2004.

Zwolle obviously is a central city; a province capital in which all relating functions are concentrated. At the same time it is surrounded by a region containing many medium-sized municipalities strongly dependent on Zwolle. Therefore, city centre accessibility and car access to job locations are important issues as the surrounding municipalities within bicycle distance have relatively few inhabitants. The spatial structure of the city is exceptional. Unlike Zutphen, Deventer and Kampen, the city centre is not on or near the river IJssel. Zwolle nonetheless mainly expanded along the linear direction of the river. Furthermore we see the striking relation to the motorway network; the A28 actually traverses the city at 400 metres from the city centre. The remotest quarter in Zwolle south, Ittersumerbroek, is more than 4 km in a straight line from the centre; the remotest point of the new expansion location (Stadshagen) is nearly as far away. These are considerable internal distances to be covered for a city this size (over 110,000 inhabitants).

Map 7. The Zwolle bicycle network



Raised eyebrows

Nevertheless Bosch and Ekhart mainly raise their eyebrows and their eyes become question marks when we suggest these factors could be 'negative for bicycle use'. Surely they never looked at things this way and surely this is different in their view. Just take the A28, to start with. Without any doubt this makes up for perfect connections by car. But a barrier to bicycle traffic? **Ekhart**: "Cyclists on the routes to Aalanden, Stadshagen and Westenholte really are not aware of crossing the A28. This motorway fits in so well from a spatial viewpoint that it poses no problem at all to cyclists." Nor are the avenues that together form the Zwolle ring and the railway line traversing the city at a right angle to the motorway heavy barriers in daily practice. The same goes for the Zwarte Water, behind which Stadshagen arose. "When developing Stadshagen, the choice was made again to project a central bicycle-public transport-axis toward the centre. This has meanwhile been realised. Only the bridge across the Zwarte Water is not in the north-west direction we desired, but rather at a right angle to the Zwarte Water. This was mainly on nautical grounds. In cases like these you must give in from time to time, you cannot win on all fronts. But first and foremost there had never been any doubt municipality-wide about the desirability of realising this central bicycle-public transport-axis and to divert more cars around the city. This is what is most striking here: bicycle use is part of the inhabitants, cycling policy belongs to public servants and city managers. We seldom see discussions about starting-points."

Are Stadshagen and Zwolle-Zuid too far to cycle regularly? Bosch and Ekhart do not believe a word of this. Nor is this an opinion frequently heard in Zwolle. Obviously the high bicycle use figures show that they are right, but they can also explain: "Both in Zwolle-Zuid and in Stadshagen for the time to come we will be putting in a great effort towards bringing functions within these city sectors, on a fitting scale. Although of course they are not independent quarters, many trips can indeed remain within these quarters, which will award an important role to the bicycle anyhow. Now what is most important is the essence of our cycling policy: when heading for the city centre and the railway station our direct, comfortable routes with their little congestion are a practical counterbalance for these seemingly long distances."

Segregated networks

There are various explanations for the speed and comfort these bicycle routes offer. The most basic aspect of the explanation for the successful Zwolle cycling policy is its starting-point at the level of traffic structures, networks. Continuous efforts from the '70s onwards enabled the municipality to realise the best part of the main network of bicycle routes, most of them segregated from the busiest parts of the car network. Attempts had always been consciously directed at segregated car and bicycle networks. The concept of separate cycle paths running along traffic arteries has therefore become a relatively unimportant phenomenon in Zwolle. In Zwolle-Zuid and Noord for instance we find the great majority of bicycle routes running through quiet residential streets. Or, rather, through residential streets made quiet by way of circulation measures. Take the Middelweg for instance; a busy car route in Zwolle-Zuid, not a main bicycle route for that matter. The main bicycle routes are running parallel, 200 metres west and 500 metres east of the Middelweg. And we can find a lot more of these examples when we compare car and bicycle networks by laying them on top of each other.

The 1978 *Fietsverkeersplan* bicycle traffic plan line still underlies the policy of Zwolle: 'We advocate the realisation of a bicycle route plan that contains sections offering higher quality to bicycle flows than other roads can do; all this with the purpose of giving cyclists their own place in present and future traffic.' Simultaneous attempts are towards 'preventing the main connections from running parallel to' car traffic sections. Main bicycle routes should be kept separate from main roads as much as possible and must traverse busy crossings by way of bicycle-friendly traffic regulations.

Source: AGV, Verkeers- en vervoersplan Zwolle part 3: Fietsverkeersplan (text), 1978.

Free of conflict

A great advantage of these segregated structures to cyclists is that the main routes contain fewer traffic light crossings; in fact only where bicycle routes cross the most frequented car routes. For this reason, the municipality has been working for years on transforming these crossings into flyovers or tunnel passages. This for instance happened on all crossings with the IJsselallee and a few crossings with the Zwartewaterallee and Ceintuurbaan. Quite a few still figure on the planning list, such as the 'conflict-free crossing' between the Meppelerweg and the Ceintuurbaan, which is about to be realised. All this makes Zwolle the city of the bicycle tunnels - and the municipality has devoted a lot of attention for years to social safety

here as well. Especially this concept of social safety induced the municipality to choose for main bicycle routes by way of residential streets wherever possible. After all, social control is more intense here than on segregated cycle paths. Another point for attention has long been proper lighting along main bicycle routes in Zwolle. The 1995 policy document named *Rapper op de trapper* already included the notion of 'nocturnal routes'; a selection of main bicycle routes that should for instance comply with strict lighting demands.

Further to these attempts to create comfortable, segregated bicycle routes, *Rapper op de trapper* devoted much attention to bicycle-friendly solutions at crossings. 'In Zwolle we increasingly decide to give cyclists priority above cars, wherever this is a responsible thing to do. This policy will be continued.' So: much attention to traffic light regulations, and five policy rules for bicycle friendliness.

City of bicycle lanes

Apart from being a city of bicycle tunnels Zwolle is a city of bicycle lanes as well. This also is a consequence of the choice of policy, aimed at segregating main bicycle routes from car structures. Whereas the cycle lane is often a temporary solution elsewhere in the Netherlands due to a lack of space for separate paths, this is mostly a conscious, positive choice for Zwolle. It becomes visible in the lanes here; not those very narrow lanes that defy all traffic guidelines, making it impossible for cyclists to ride in pairs, but generally wide, comfortable lanes. Zwolle works towards a respectable width of 2 metres; most of the cycle lanes already are 1.75 metres in width (except on routes like the boulevards surrounding the city centre, where they are 1.50 metres). They also are situated in streets with relatively little car traffic. This is the exact reason why Zwolle wishes to apply the concept of 'bicycle streets'. Bosch: "We are working on a bicycle-street policy document. We see this as the way of taking yet another quality step for cyclists on our main routes. These routes have become relatively free of car traffic already, so the bicycle-street story wishes to emphasise the preferred position of bicycle traffic on these routes."
In its choice for cycle lanes, Zwolle also awards a prominent role to the comfort of cyclists. After all, cycle lanes are far easier to embody in maintenance schemes than separate cycle paths, because lanes are an integral part of the road surface. This is another major advantage when removing blackice for instance.

Van Karnebeektunnel

Comfort of bicycle facilities has long been a core concept for Zwolle. This was the reason for this city to start working with a 'measuring bicycle' at an early stage, to determine the degree of bicycle comfort in the most objective way possible. All thirteen main routes were studied closely.

Source: Gemeente Zwolle, Comfortabel op het zadel: kwaliteit van 13 hoofdfietsroutes, 2001.

From the jury report *Fietsstad van het jaar 2004* [2004 cycling city]: The municipality of Zwolle has been nominated in the category "fast, comfortable and attractive". It has now appeared that the city of Zwolle is the most comfortable cycling city. Practically all bicycle facilities are asphalt for instance. Delays due to traffic lights are low (less than 11 seconds per kilometre), the average speed is high; other traffic participants are of relatively little hindrance and bicycle facilities are generally wide enough to enable comfortable side-by-side cycling. What is also striking is the good surface, especially of cycle lanes and solitary cycle paths. There is hardly any nuisance to cyclists here in the way of vibrations. This is the result of many years of undivided attention to bicycle routes.'

Bicycle versus car

Zwolle pays special attention to realising proper bicycle facilities; a cycling policy firm as a rock and supported widely. Primarily spoken however, this policy has a value all its own and is not generally offset against car traffic facilities. Not only the networks, also the areas are segregated in the sense that cycling policy development must not be continuously placed in the perspective of competition with cars.

This does not often give this cycling policy a heavy political load either. Willem Bosch can remember quite a few times that cycling policy was a serious political issue - consider for instance all those measures taken in and around the boulevards (the 'inner ring') in the early '90s - these can really be named exceptions. "Groningen, Amsterdam, that's where you find these ideological city council discussions. Here in the east they are far less frequent. Certainly, we do a lot for cyclists and sometimes this was at the expense of car facilities, and certainly this sometimes resulted in commotion; still, our prominent red line is that even for cyclists it is far better to keep on working towards these strongly segregated structures. Forcing back car intensity and car speed remains an issue on our radial main bicycle routes, as, after all, they have also been used intensively by cars for ages. Still we persistently try to find a way out. Take for instance the Assendorperstraat. Ten years ago we just could not have

it our way; now it is one-way traffic for cars, despite the many shops."
The same largely applies to (car) parking policy in and around the city centre, says Bosch. "This is another issue in which we are no leaders." Only now we see drastic measures being taken in parking capacity in the city centre. Almost all street parking places will be removed, while replacement capacity is being realised in parking garages and outside the boulevard area. In the past there was fierce political discussion concerning parking, especially in the late '80s, the time of our *Parkeernota* policy document. At the time our parking charges were increased to a level that can even now be considered as relatively high in the Netherlands.

Assendorperstraat

Green fingers

All this working towards segregated main structures turned out so well for Zwolle that the city never made a choice to open up new quarters by diverting car traffic around them. Although for the city expansions of the past few years the municipality did indeed give more direct and shorter connections to bicycle and bus than to cars, the car routes still take a fairly central course through the city. Nowhere do we see the well-known ring road as boundary between new residential areas and outskirts. This has always been an outspoken political starting-point: Zwolle was to remain a green city, come what may. There have always been 'green fingers' stretching out almost into the city centre. "The location of the city office, just behind the railway station, still had cows grazing there until the '90s", says Bosch. As the transformation from city centre to outskirts had to remain gradual on all ends we did not want this clash in the way of a sharply-defined ring road.
No wonder that Zwolle's "Fietsbalans" scores are bad as regards car-bicycle travelling-time ratios: number 22 of the 25 100,000-plus municipalities. Places with even lower sores are Emmen, Dordrecht and Zoetermeer; about as bad as Apeldoorn and Ede, where cycling takes a very prominent position as well. There seems to be a connection here: Ede, Apeldoorn and Zwolle are fairly spacious, maybe even village-like cities offering good facilities for bicycles as well as cars - these two do not really clash. Also, these three municipalities are located in a more or less eastern position in the Netherlands. Again, a matter of culture?

Almost ready

Bosch and Ekhart might seem reluctant to admit it, but it is an inevitable conclusion: the cycling policy of Zwolle as regards bicycle routes is almost completed. "My estimate is that 90-95% of the routes have been realised in the way we projected them." What remains is tackling a few crossings and upgrading a few main routes into bicycle streets, but this sums it up more or less. The core of our activities will from now on be optimisation and good management and maintenance.

An essential element in the history of Zwolle cycling policy is its continuity. This has been adhered to from a planning level right through to design level. In fact, most of the 1978 *Fietsverkeersplan* still stands, except for some mutations due to city expansions unforeseen at the time. The thirteen main bicycle routes in *Rapper op de trapper* (1995) still form part of the main network, added by some tangential routes and routes to the most recent residential expansions. The great majority of the plans of the above policy documents have been realised as well, although not along the strict plan lines of *Rapper op de trapper*, which involved a four-year programme and a relating, reserved budget of 9,9 million guilders (almost 4,5 million euros). These specific budgets just never appeared. Looking back, Bosch and Ekhart do not appear to regret this. After all, if continuous, integral assessment of all projects also enables the realisation of a considerable number of bicycle projects, so much the better.
A 2001 BYPAD-audit stated that in Zwolle roughly 10% of all spendings on infrastructure goes to bicycle facilities and that traffic departments roughly spend the same amount of time on 'bicycles' as they do on 'cars'. "When considering this over a period of roughly twenty years, this is a pretty accurate picture", confirms Bosch.

Parking bicycles

A clear, coherent vision, realised persistently over many years. Although this might be the picture of Zwolle policy as regards bicycle routes, this turns out different for bicycle parking. Zwolle is a two-faced city in this respect. Policy is focused strongly on the railway station area: high-quality parking facilities generally offering more than enough capacity, and with stringent enforcement. For Zwolle this results in a picture of having just about the neatest railway station area of all Dutch cities on most days.
On the other hand there is the situation in the city centre. Although this has been an issue in all municipal bicycle plans it has had very little follow-up for about fifteen years. The underlying design was merely a paper one. Admittedly, the situation in the city centre is far from simple. The extent of the public space is extremely limited; in fact, Zwolle has no major squares fit for bicycle parking. Proper solutions offering bicycle parking capacity concentrations are inevitably 'in-house'. The little progress made so far is also partly due to the position taken by the bicycle department officials. Bosch: "Bicycle parking facilities are hardly an issue in cycling policy. If you want to do it properly you must situate them in suitable spots. For this reason I have been consciously resisting wrongly-located bicycle parking plans for years, too remote as they are from the city centre or the bicycle routes. Nor have I ever supported plans to discourage or even prohibit bicycle parking in streets as long as there are no proper alternatives. So far, unattended bicycle parking has been possible almost all over the city centre."
Again, Zwolle has far-reaching plans - and this time they look promising. The three existing attended bicycle parking facilities are free of charge by now, and one of them is pretty well used indeed (and well-located). More important however are the plans for a new (free) bicycle parking location: in-house, and offering over 600 places in a real city-centre location between the Melkmarkt and Voorstraat, and with an exit leading to the Grote Markt.

Bicycle parking near Zwolle railway station

When leaving Zwolle railway station by way of the city centre exit you will find bicycle parking facilities on your left, Westerlaan, and on your right, Oosterlaan. The last look new. Between the road and the fence along the railway track we see fine, sheltered and lighted unattended cycle stands with ca. 900 clamps at intervals slightly wider (37.5 cm) than before. The closer to the station entrance, the fuller the stands are. Each metre appears to count here.
At first sight the users are satisfied. The only impression they have is that quite a few cycles are left in their stands unattended for many weeks. This is now being tackled by the municipality by way of a sticker campaign: if a bicycle containing a sticker is still found after two weeks it qualifies for removal.
Complaints heard in the Oosterlaan parking facility only concern antisocial behaviour of a few fellow-users, despite the fine equipment. "Look here", points a student from Groningen coming over to spend the weekend with his parents in Zwolle, "this is what annoys me. A guy like this who is a bit late and just slams his bike into the fence to win just a hundred metres." It is true, several bicycles are found standing outside the clamps, but other users do not really seem to bother as long as they are not really in the way. When looking at the crammed, chaotic Westerlaan stands you really do not understand why users do not move over to Oosterlaan in greater numbers. When asked for an explanation this is short and univocal: they just happen to work, study or live this side of the city and why cycle 500 metres on for a bit more parking convenience?

6. Veenendaal: pampering every 300 metres

A village that grew into a city: from 5,345 inhabitants to over 61,000 in 2005. Veenendaal is one of the many 'new towns' of the Netherlands, with all those characteristics we already know from places like Capelle aan den IJssel, Zoetermeer, Hoofddorp and Nieuwegein: uniform residential areas, large business parks and exchangeable 'boxes' along the motorway. Yet, Veenendaal has another characteristic, one which is absent in all those other municipalities: a high degree of bicycle use, in line with the top-10 of Dutch cities. Nearly 31% of all trips made by inhabitants of Veenendaal are by bicycle. Now what are the reasons that especially in this new town bicycles are ranking so high? An explanation by Leo Smolders, until recently head of the traffic department of the municipality of Veenendaal.

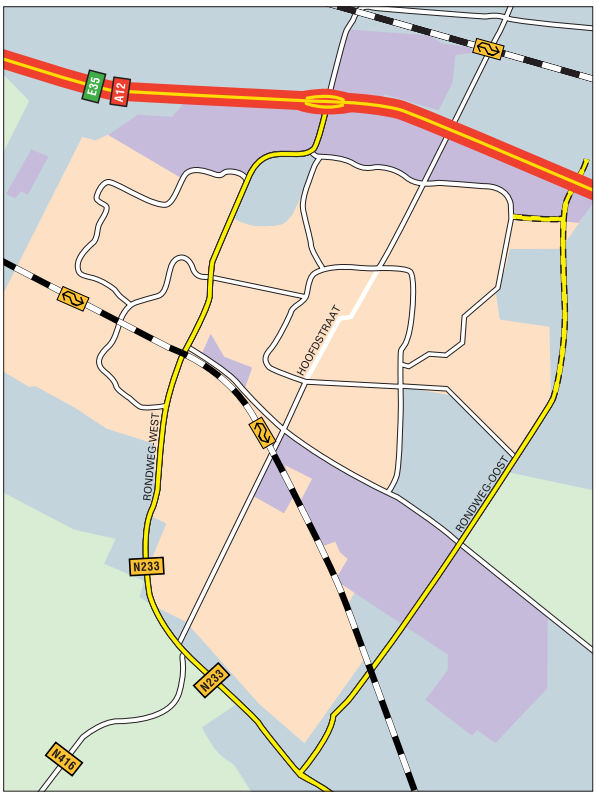
To Leo Smolders (right) the beginning of this story lies way before cycling policy times. The spatial structure of Veenendaal is a decisive factor. The built-up area virtually is a 4.5 by 4.5 km square, with the town centre neatly positioned in the middle. So: ideal for bicycle use. In its turn this structure is due to 'coincidences' like the limited municipal surface, and certainly to the conscious spatial policy conducted over the last few decades. Admittedly, Veenendaal had enough opportunity to adopt an effective spatial policy in those years, for two reasons.

photos: Dirk Ligtermoet

Many spatial opportunities

In the first place Veenendaal is certainly not to be considered the classical agricultural village suddenly turned centre of development in post-war years. Founded as a fen community, Veenendaal still shows its typical grid pattern; straight roads, originating in the structure of the fen waterways. It had become a relatively large village already in the 18th century, boasting a considerable industrial sector. In the first half of the 20th century the textile and tobacco industry flourished. After 1970 many of these ancient industries rapidly disappeared. The resulting vacant centrally-positioned locations offered many spatial opportunities. Due, perhaps, to factors like this industrial history, Veenendaal remained in control of its spatial and economic developments for a long time to come, always attempting to attain a proper balance between working and living, and quite successfully. Until way into the '80s the town was successful in maintaining a situation of 'employment for own inhabitants'. The retail trade also tried to maintain such a balance, and was even more successful. Veenendaal now has near-perfect purchasing power relations for its own inhabitants. This obviously has important effects on traffic: many local 'cycleable' trips.

Second, it is of interest that Veenendaal was given a development task in the 1996 policy document named *Tweede Nota over de ruimtelijke ordening in Nederland [Second policy document concerning spatial planning in the Netherlands]*. The village was planned to develop into a city of 100,000 inhabitants. Although this was not fully attained, there was continuous development in the form of new residential quarters from the '70s onwards. This often made instant construction of proper bicycle facilities possible, both on a structural and a design level, and also enabled funding within the overall operating budget of the new residential quarters. And all this with a keen eye on good accessibility by bicycle of all district facilities. See map 9 of the bicycle network: all shopping centres and nearly all schools relate directly to bicycle routes.



Map 8. Veenendaal

Consistency in traffic policy

Veenendaal's turbulent growth occurred in a period in which the municipality had long since had its own accepted structure plan, drawn up in 1948 by urban planner Van Embden. This plan really assigned the status of ring road to the Rondweg-West. But this was not to be. The original plans which were aimed to realise new developments in the south were changed when the re-opening of the railway to Utrecht came into view. For this the Dutch railway company however demanded expansion (over 5,000 houses) in a direction west of Veenendaal. This made the Rondweg-West a central axis, and at the same time the only connection onto the national motorway network. By that time another projected main route, Rondweg-Oost, had already become an issue. This route, all but situated on the eastern municipal boundary, should in any case have to handle all north-south through traffic - and is by now also projected to open up the southern business parks (300 companies) plus the new residential quarters Dragonder-Oost and Veenendaal-Oost. Completion of this route is expected by the end of 2007. The traffic structure plan prepared by Goudappel Coffeng, determined in 1998, clearly demonstrates the value of the eastern ring road: through traffic is diverted virtually around, and central traffic is handled quickly via both ring roads. Together with the conveniently-located business parks (all on the edge of town, near the arterial roads) this results in a more or less uninterrupted residential area in Veenendaal, without intense traffic functions.

Buurtlaan-Oost

Cycling to the shopping heart

The Rondweg-West ring road also made it possible to bar more cars from the city centre, because through north-south traffic was now able to take another route. The former north-south route by way of the central shopping street (de Hoofdstraat) received a new layout, first in the form of a yard layout with one-way traffic for cars, later (1988) as pedestrian area, accessible to cyclists at most times as well. Barring cars from the city centre was further promoted by the phased construction of a centre ring. This centre ring could be completed in the late '70s due to the fact that a number of business parks west of the centre had been vacated.

Attended free bicycle parking: the force of simplicity
Demand for attended bicycle parking facilities in Veenendaal arose in 1990 among members of the shopkeepers' association. The idea was that the municipality would provide bicycle parking facilities and that the shopkeepers would contribute to the operating costs. The shopkeepers' wishes met with response from the municipality and the local cyclists' union. Cycle stands, cubicle for the attendants, fence around it, ready. As car parking still was free at the time, the municipality thought it was obvious to make bicycle parking free of charge as well. Success was ensured in this way and a first expansion was soon to be followed by a second, resulting in a total of 250 bicycle places.
A few years later the swimming-pool got a bicycle parking facility for 400 bicycles. On fine summer days this can easily be enlarged to 1,300 places with the help of a few extra fences. In the city centre the bicycle parking area of a municipal office was enlarged to a free bicycle parking area during office and shopping hours. This bicycle parking is almost four times as large on Friday and Saturday nights and open to three o'clock in the morning, all with a view to evenings-out and entertainment. Each time the investment is low as manpower is found in employment schemes, keeping costs limited. The most recent addition has been the bicycle parking near Veenendaal Centrum railway station. The municipality provided the paving and Dutch Rail paid a bicycle parking facility of 400 stands. As this has been fully occupied from day one onwards, enlargement is required. The annual costs, € 60,000 for all bicycle parking facilities together, are covered by the municipal parking fund.

Culture

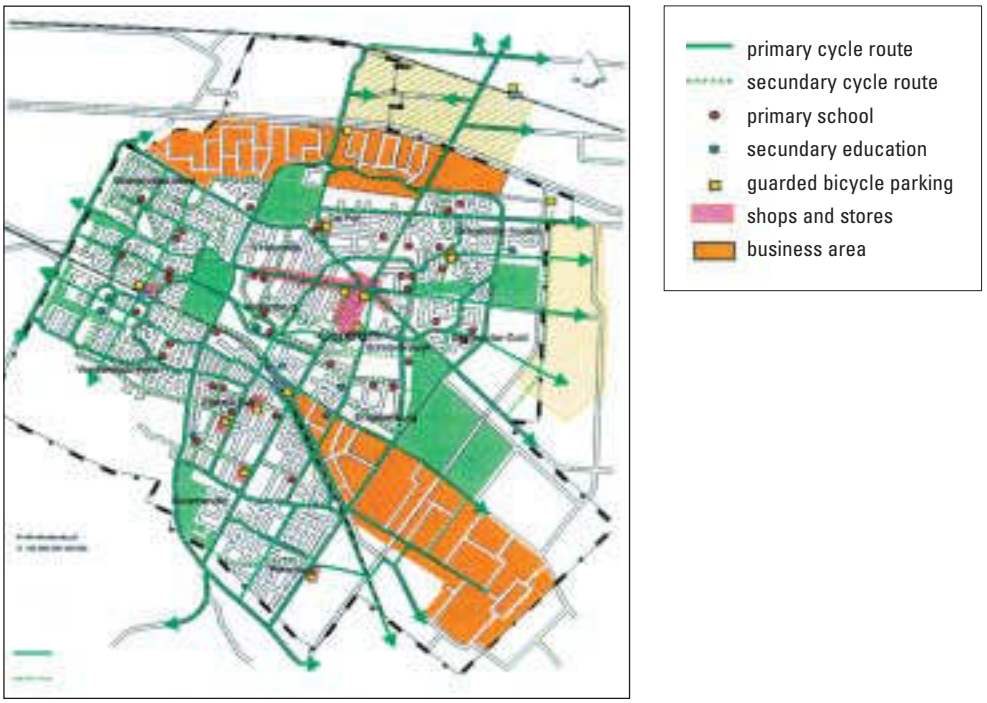
Hardly tangible and difficult to copy to other municipalities, broad, continuous social support is a central point for Smolders. Wide-felt support, not only within the official system, but also in politics. Right through to mayor and aldermen, who, certainly in the past, went practically anywhere by bicycle, without this being interpreted as demonstrative. "There is no need for us to explain the interest of cycling to the council. Cycling is our standard; it is deeply ingrained with us." In 1990 this resulted in the first attended bicycle parking facility at the instigation of the shopkeepers' association. One supermarket even contributed by handing over a few car parking bays in front of its entrance, to have them replaced by bicycle parking facilities. Smolders favours the word 'organic': cycling is 'common' and 'logical' in Veenendaal. Bicycle use, bicycle culture and cycling policy mutually reinforce each other, more and more. The policy is also directed at reinforcing this culture; educational measures have long since occupied a permanent place in municipal policy. Children for instance receive a bicycle flag for their fifth birthday. In conjunction with the 3VO traffic safety association, much work is put into school traffic examinations. For secondary schools there is an interactive programme on traffic safety and a bicycle inspection.

Ambachtsstraat

Car barrier

Even after the completion of the Rondweg-Oost ring road and the disappearance of through car traffic from the city, the Rondweg-West ring road will remain a busy route. Calculation models assume 22,000 vehicles / 24 hrs in 2010 (versus 25,000 to 30,000 on the Rondweg-Oost ring road) on this barrier between Veenendaal- West and the centre. Of all crossings between the Rondweg-West and the east-west bicycle routes there is only one that is not on the same level. This is a contrast with the bicycle crossings with the Rondweg-Oost, which are largely in the shape of tunnels. Smolders is nonetheless convinced that the barrier effect of the Rondweg-West will continue to be slight, also because a few car traffic crossings T-junctions, while the crossing bicycle route is continued on the 'fourth leg' of the crossing. This enables quick four-direction handling.

Map 9. The bicycle route network of Veenendaal, including guarded bicycle parking facilities

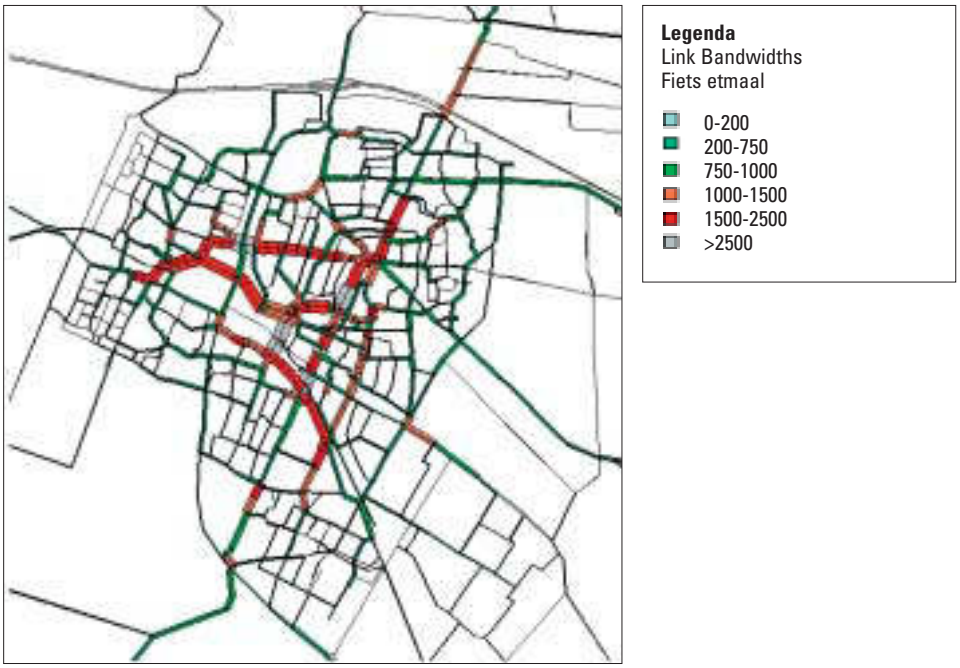


Mesh

What already appears at the crossings with both ring roads is an essential characteristic of the bicycle facilities in Veenendaal: the small, persistently applied mesh of the network. The bicycle route network of Delft, to which the national government heavily contributed, is known way outside the Netherlands. In this early '80s project example, fixed widths were systematically applied: 500 metres for main routes, 200 to 300 metres for the town quarter network and 100 metres for the vicinity network. Only few cities really have applied this system right until the very last route in the last decades. Veenendaal has, however, but with a philosophy all its own: no or virtually no distinction between network levels (or, in other words, the main and town quarter networks coincide) and a strictly applied 300-metre mesh; a distance already applied in the early '70s near the tunnels under the railway embankment in Veenendaal-West. Near the new Rondweg-Oost this mesh is still strictly adhered to: twelve crossings every 4 km. Smolders: "In this way we have been able to realise a fine-mesh network within which the ideal line is practically always attained. So: very short diversions, and especially: when heading for the centre, many inhabitants can for instance choose between two or three route options; various routes, each with its own characteristics, so each to your own taste. What you see is that this works in practice: the socially less safe routes through parks are used relatively less in the evenings than their alternatives close by. In short, a really fitting offer to our citizens."

Also from the viewpoint of quality this system of various equivalent parallel bicycle routes clearly demonstrates its effectiveness. Take for instance the three routes from the southern quarters to the centre; they are used by 2,000 to 4,000 cyclists every 24 hours (see Map 10).

Map 10. Bicycle intensity levels in Veenendaal, with (parallel) busy routes predominant



Comfort as far as the gutter

Leo Smolders is convinced that this systematic, continuous effort spent on proper bicycle facilities explains the high level of bicycle use in new town Veenendaal. Apart from the aspects named, such as a fine-mesh network and an enhanced bicycle culture, the design of these bicycle facilities is of equally great importance: comfort and speed all over the routes. In a number of connections in Veenendaal this resulted in the striking choice for cycle paths - most of them in two directions - running alongside a residential street with a very limited degree of car traffic. The concept behind this is that a high-quality uninterrupted route for bicycles outweighs the advantages of the greater economy of space and costs of bicycle routes that partly run through car-restricted streets. And these routes are truly perfect for cyclists! As a result, most of the bicycle routes in Veenendaal are a constellation of individual stretches, especially in the latest new town enlargements, and cycle paths are running parallel to residential streets, especially in the older layer encircling the centre. The bicycle routes in this 30 km/hr area have priority all the way.

This attention in Veenendaal to proper bicycle facilities does not stop at fine-mesh systems and through routes; it is the details that count. Cycling through Veenendaal, Smolders time and time indicates the right and wrong details. Most striking of these: the cycle path asphalt evenly continues when crossing other routes, gutters included. Except on the pathway along the Prins Bernhardlaan. Smolders shakes his head, disappointed at this omission.

Boslaan

7. Odense: laboratory with enthusiasm

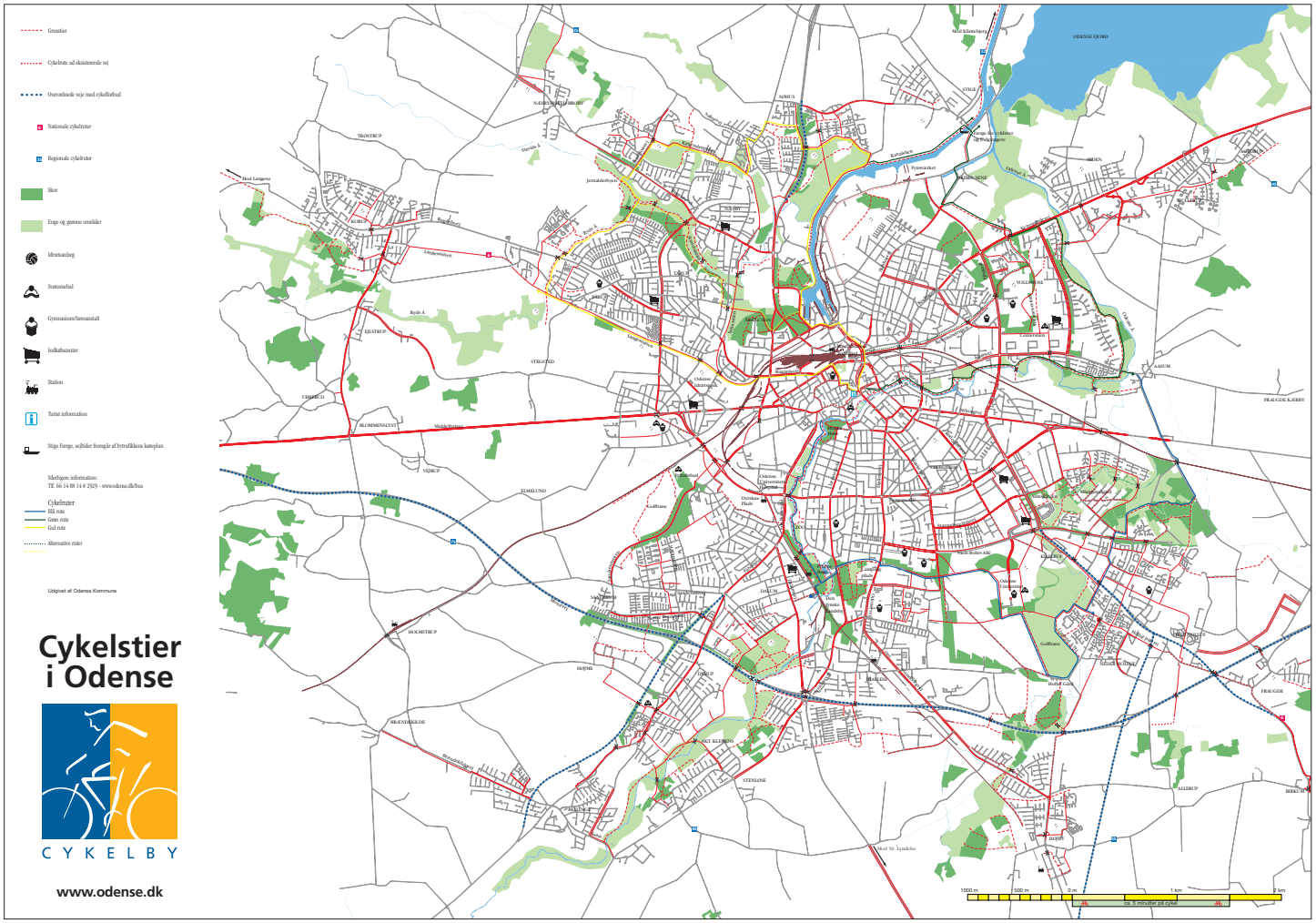
Odense, Denmark's third city as regards inhabitants, has lately been known primarily as a city with a progressive, innovating cycling policy. For this reason, Odense appears in the BYPAD European benchmark methodology as the city with the best cycling policy in Europe. This is the result, first of all, of a four-year programme of experiments conducted in Odense as from 1999, with financial support by the Ministry of Transport. Just how innovating, interesting and effective is this approach of Odense?

photo: Mette Johnsen

Odense certainly did not start from scratch in 1999. For a long time the city had had a high degree of bicycle use combined with a proper cycle path network. Ever since the '80s the cycling network has included over 350 km in paths and lanes. Since then the network has hardly been expanded. Most attention went to improvement of traffic safety and comfort and to bicycle use promotion. Since 1999 the network has been expanded by 400 m cycle path only.

During this four-year programme Odense was appointed National Cycling City by the ministry, with the purpose of implementing and testing a large number of projects aimed at enlarging bicycle use by way of innovating infrastructural measures and promotional activity. The target was: a 20% increase in bicycle traffic in four years, purely by drawing more attention to bicycle use and by making it more attractive.
The programme, which in the end included ca. sixty completed projects, had a budget of ca. € 2.7 million. The municipality and the Ministry of Transport each paid half of it.

Map 11. The Odense cycling network



No new routes, but infrastructural measures instead

Although the Odense cycling network might have been finished in the way of routes, large infrastructural improvements were required here as well and much has been realised since 1999. The safety of twenty crossings was improved and speed was lifted (five mini roundabouts, fifteen exit lanes to the right). A very conspicuous, bright-blue crossing with advanced bicycle positions was realised at a few traffic-light crossings. Better bicycle facility markings were placed along the roads in the city centre.

In addition, more conspicuous innovative measures were taken, part of them to be indicated as 'infrastructural':

- *Green wave for cyclists*

At ca. 350 m. intervals along a bicycle route we find 45 low poles between two crossings, each pole lighting up green at a few seconds' interval from the other. Who follows these lights has the correct speed (though only 15 km/h in this case) to profit from a green wave. Another bicycle route is equipped with electronic signs indicating the cyclist's speed. Cyclists themselves appear reasonably satisfied about this. Although not nearly everyone who saw these light poles realised their purpose at first, half of them are now (more or less) convinced. The problem however is that cyclists have rather varying speeds. Fast cyclists would prefer a considerably higher lighting-up frequency of the guidelight.

- *More and quicker maintenance*

All cycle paths have asphalt surfaces. Over the last few years the budget of Odense reserved for new asphalt surfaces has been doubled. Apart from this, Odense uses a specially equipped Smart for a thorough X-ray of the cycling network. It is a small car, equipped with a laser beam that accurately maps uneven patches. The maintenance scheme is prioritised on the basis of the data obtained. These data are used for other purposes as well.

Detection of 'daily pitfalls' in Odense is done by four people who are hired to go out into the streets equipped with a digital camera. These cameras are connected to small computers. As soon as a hole is detected a digital picture is made. This is instantly sent to the municipality by way of the computer. The municipality assesses the situation and sends the photo to the contractor if necessary. The contractor returns a photo following repair. The bicycle patrol group receives a ca. € 3.30 reward per hole 'scored'.

- *Barometer counts cyclists 'as they pass'*
  The bicycle barometer, too, is an invention of Odense (2002). Although its true functionality is obscure, it is more of a publicity- and attention-generating measure, aimed to make cycling intensity really visible to all citizens. Each day 5,000 to 10,000 cyclists pass the barometer. The annual total is added up as well.

1984 city centre pilot

Odense already participated in an earlier promotion programme of the Danish Ministry of Transport. In 1984 four cities, including Odense, received money for the purpose of constructing a proper bicycle route. In Odense this was done in the city centre, where through car traffic had already been barred in the '70s. However, cycle paths still were largely absent while over 12,000 cyclists had their daily destinations here. Apart from real pedestrian streets where cyclists were exempt from one-way car traffic measures, attention became focused on two types of new road layout, namely:
- a 3.50 m wide two-way cycle path on virtually the same level (3 cm lower) in some shopping streets, with wide pedestrian zones (4 to 5 metres) on either side;
- a combined 6-m wide cycle-and-bus lane.

This pilot (too) was assessed thoroughly. Its main outcome was that mixing cyclists and great numbers of pedestrians turned out far more positive than expected. Only a very limited number of (slights) accidents occurred. At the same time the value for cyclists was high: access to destinations in, and also 'past' the city centre improved considerably. The combination of cyclists and buses was slightly less positive: cyclists too often felt oppressed by buses approaching through the middle. Still, the number of cyclists to the city centre increased from 12,500 daily in 1982 to 15,400 in 1990 - although this certainly cannot be attributed to these measures alone.

Bicycle parking: limited numbers, fine shapes

The four-year programme of experiments also gave much attention to bicycle parking.
Car parking facilities were exchanged for a bicycle parking location with 800 bicycle stands in a central square in the city centre. Another 400 sheltered stands were created in *Kinopladsen* near the shopping streets, and another 200 clamps were placed all over the city centre. Central station bicycle parking capacity was enlarged as well: 400 clamps behind the central station and an in-house attended bicycle parking facility below the station, offering 250 places. From a Dutch viewpoint the realised numbers of bicycle parking places certainly are not high. But what is most striking in the new bicycle parking facilities in Odense is their quality much rather than their quantity (admittedly, quality is far easier to be attained when quantities are low!). What jumps into view is the (small) automatic parking facility near the shopping area; a carroussel according to the principle of a bicycle locker - capacity 20 bicycles - allowing three hours' safe bicycle parking at DKK 5 (€ 0.65).

Promoting bicycle use

The extent of the infrastructural measures taken in Odense in the last few years concerning both running and parked bicycles is not really spectacular. Far more interesting are the technical and technological innovations on paper. However, most striking about cycling policy in Odense is its relatively strong and broad attention to promoting bicycle use. There is a

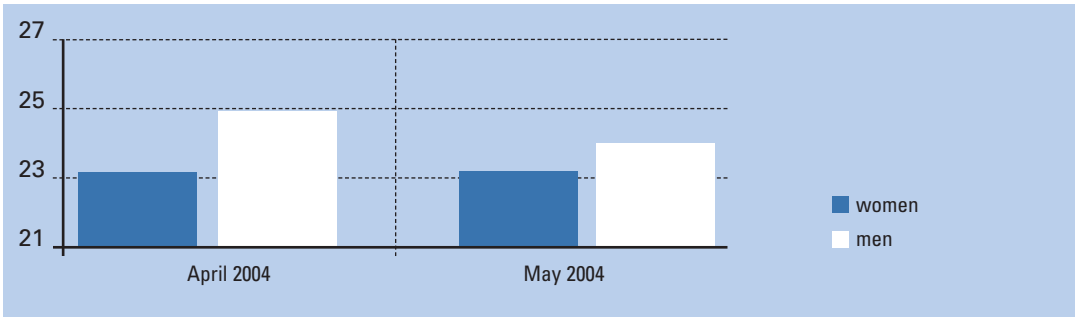
continuous flow of information during the four-year programme of experiments via the internet (site: www.cykelby.dk), tv, radio, newspapers, magazines (local media feature a total of 806 articles on Odense Cycling City) and lectures. Two editions of a special bicycle magazine were made for inhabitants. The general public, but also journalists and traffic experts were constantly fed with new stories, information and with recurring actions which, although not really revolutionary, derived their power from their regular succession. These actions are:

- the annual bicycle day in June, including an exhibition of normal and very unusual bicycles, a trial show, prize contests and lotteries. Number of visitors: over 450.
- handing out apples and chocolate during one October week to a total of 5,000 cyclists, conveying the message: thanks for your bicycle ride. Cyclists were also given a folder containing facts about bicycle use in Odense. Red line of these actions is the attempt to introduce bicycle use as a modern lifestyle, for instance with a large, high-quality billboard campaign.

Promotion and the business community

Each year a national Cycling to Work campaign is conducted with growing numbers of participants; nearly 8,000 in Odense and almost 100,000 all over Denmark. This campaign is virtually identical to its Dutch Cycling to Work counterpart, where participants formulate their own target in bicycle kilometres and keep their realised scores. A group of participants of the *Cycling to Work* campaign also took part in an additional study/contest, emphasising the importance of a daily bicycle ride. During this contest the Body Mass Index (BMI: weight in kilos, divided by the square of the person's length in metres) of 670 cyclists was measured before and after the campaign. This is the average score and shift:

Figure 4. BMI-average for women and men before and after the campaign



The men show a slight decrease (= improvement), the women hardly any. Admittedly, the purpose certainly had not been a radical change of this index within one year, but rather to draw attention to the effects of bicycle use on health.

Another well-known thing in the Netherlands regarding transport management is the phenomenon of company bicycles. These occupy a central position in another project in Odense: bicycles to cover short business trips by day in a healthy, environment-friendly way.
29 companies together used 67 company bicycles during a contest named *Who is the greatest cyclist?* The university won with its five bicycles: 4,600 km per bicycle in six months. The daily average for all 67 bicycles was roughly 5 km per bicycle.
To these companies there was another aspect to this kilometre contest: bicycles that had covered less than 500 km would be charged for 4,000 DKK; if more than 500 km had been covered the price to be paid was only 1,500 DKK.

School traffic

Ca. 43% of the children in Odense goes to (primary) school by bike; a percentage which has risen during the last few decades, also as a result of the many directed measures of the municipality. Great emphasis was put on car speed limits on school routes and near school entrances.

Table 9. Means of transport chosen by public school pupils in Odense in 2000 (in %)

car	21
public transport	14
walking	23,2
cycling	43,1

Source: statement municipality of Odense

After investing mainly in infrastructure, the municipality has more and more shifted its emphasis to communication. What we particularly see are experiments with tailor-made low-budget campaigns to promote bicycle use among infants and pupils of public schools even further. Studies had already been performed regularly at all 45 public schools in Odense (covering 87% of all school pupils) into the means of transport used by children to go to school and to other activities. Now, each form teacher collects details during a fixed week of the year concerning the mode choices of his/her pupils. The school enters these data into a central file via the internet, so that the municipality has instant access to all recent information.

Tailor-made campaigns are an essential element of cycling policy in Odense. No expensive brochures and billboards, but campaigns aiming to attain active, lasting participation. Each age group has its own campaign, centred around a bicycle use-contest. The main age groups are infants, children and youngsters. The idea is that children who had a great time with bicycles in their youth will continue cycling as adults as well.

Hopes also are that children will set an example to their parents. Initially, campaigns are small-scale during the first year. They are followed by assessment before being spread out all over the city. Most campaigns like these are cheap because the municipality cooperates with private persons, bicycle shops, manufacturers and sponsors.

photo: Mette Johnsen

Assessment

The four-year promotion programme in Odense has been assessed in detail *(Evaluering af Odense – Danmarks Nationale Cykelby*, 2004). During an extensive survey conducted among citizens, about half of them appeared to be informed about the initiatives that had been taken during the four 'National Cycling City' years. The measures best remembered were infrastructural improvements: short-circuits, green wave, safe bicycle parking facilities. Campaigns were remembered far less easily. Nor were they greatly valued, especially by the cyclists in the survey. These results are in line with the answers that are/were given by cyclists during an annual survey conducted for a prolonged period. They were asked which measures they thought were most important to increase bicycle use. Things most heard were: adjusting traffic lights, road surface comfort and bicycle parking possibilities. In these respects the citizens of Odense are quite satisfied with the physical facilities: 82% finds that Odense has excellent bicycle facilities.

The assessment also proved that development in traffic safety had been positive during the four years the programme lasted, but equally positive as in preceding years: 20% fewer cycling victims in four years.

To illustrate the development in bicycle use, the assessment compared the period 1999-2002 with 1994-1997. The share taken up by bicycles in all trips by citizens of Odense aged between 16 and 74 rose from 22.5 to 24.6%. There was a simultaneous, notable decline in public transport (8.2 to 6.6%). The increase in bicycle use remained within the fluctuations appearing in the time sequence from 1993 onwards. The bicycle share largely fluctuated around 25%. This was the case in 1993, later (1996) it fell until slightly over 20% and it has since been fluctuating between 23% and 27% - with 2000 as top year.

photo: Mette Johnsen

8. Copenhagen: rational cycling policy

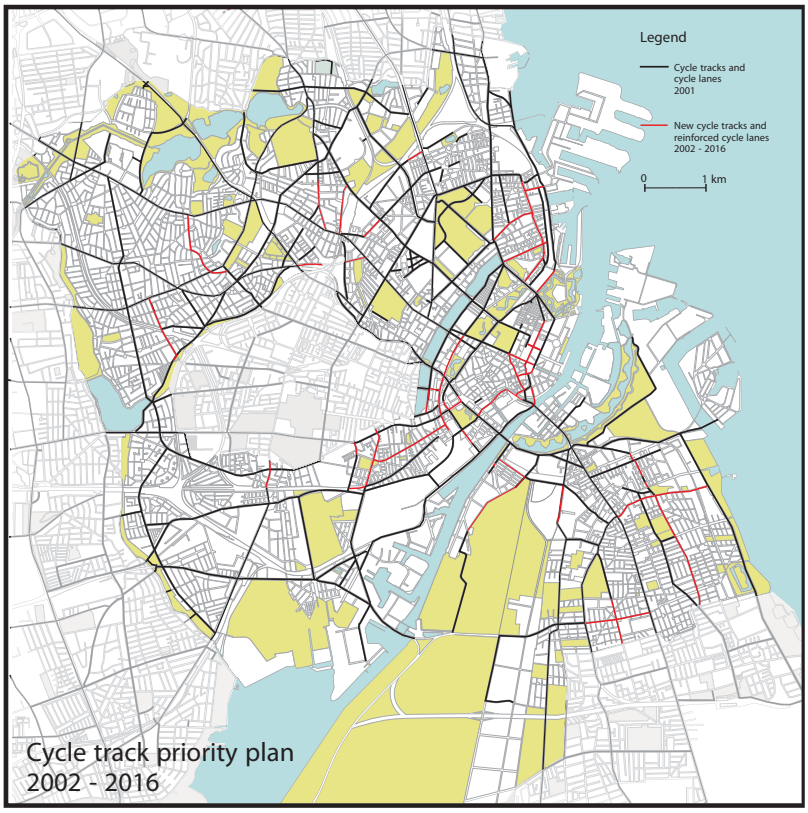
Copenhagen is one of the few large European cities with a true bicycle tradition. Bicycle use is widely represented among all groups of citizens. As usual the explanation of this is partly historical. The last few years however particularly highlight a systematic, broadly covering cycling policy conducted by the Copenhagen municipal executive.

In 1920 the compact city of Copenhagen numbered 225,000 inhabitants, in 1950 the number had risen to more than 770,000. This period of intense growth, in which bicycles - unlike cars - were available to all citizens, is an important element of the explanation of this high degree of bicycle use. It also is the start of a true tradition, a way of life, in which bicycles are dead common in a way we have come to know in the Netherlands. Since the '50s bicycle use strongly declined in accordance with the general trend in Europe (as a matter of fact just like its number of citizens, which fell to 500,000) but the trend has been rising again from the early '80s onwards.

Cycle paths; no lanes

The city's own bicycle facilities were realised immediately after the Second World War, in great numbers. Things had already started before this time (1934: 130 km cycle path) consisting mainly of recreational cycle paths along arterial roads. After 1945 a central position was given to segregation of traffic types on the busiest main roads. Many cycle paths were constructed especially along new main roads. Thanks to these facilities presumably bicycle use stood its ground, even in the decades of decline and minimal attention to cycling policy. The cycle path network has since been almost completed - almost one hundred years of cycle path construction surely bears its fruits. In total it concerns more than 300 km cycle path. Normally speaking, cycle paths are laid out on either side of carriage ways for motor vehicles, and measure at least 2 metres, often more than 2.5 metres in width. A specific Copenhagen aspect is that it often concerns '(elevated) adjacent cycle paths' in Dutch terms. A few metres before a crossing, Copenhagen cycle paths transform into cycle lanes and are conducted straight across the road (often marked out blue since the '90s, with white bicycle symbols). They transform back into a cycle path beyond the crossing.

Map 12. 2002-2016 cycle track priority plan



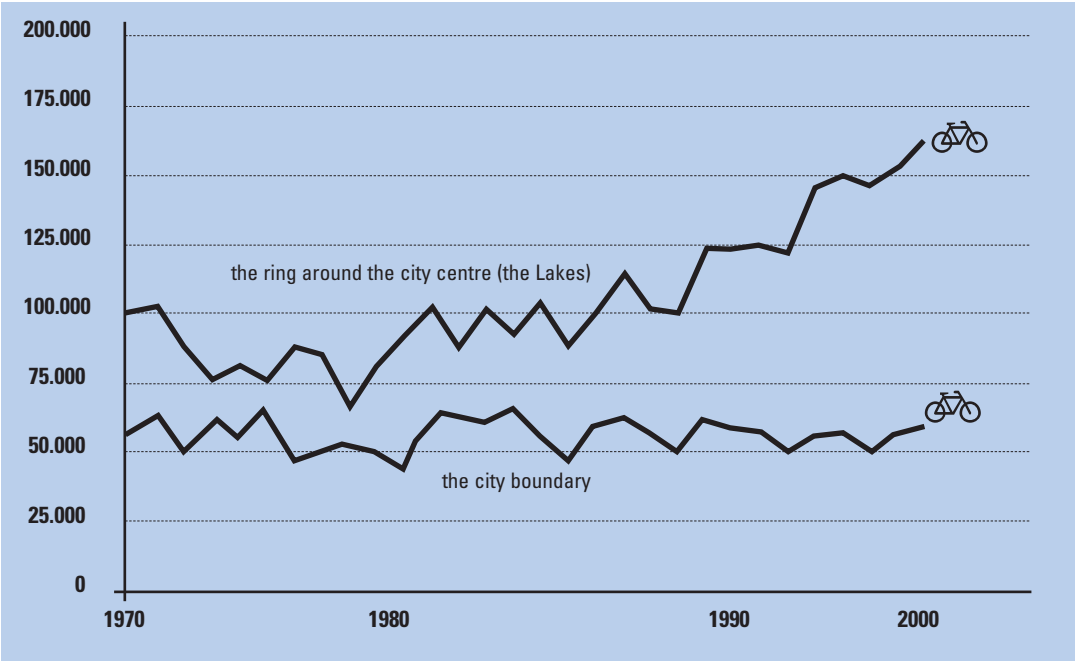
Within the framework of its *2001-2016 cycle path priority plan* the municipality wishes to complete the urban cycling route network by constructing the last 51 kms of bicycle facilities. To be successful at little expense and in the short term, a number of cycle lanes will be laid out in addition to cycle paths. They will take the shape of 'reinforced' cycle lanes: a combination of cycle lanes, short cycle paths (such as near bus stops) and traffic islands segregating bicycle traffic from motorised traffic. These reinforced cycle lanes are intended as cheap, temporary measures. They will later be replaced by permanent cycle paths. For this reason the cycle lanes are laid out in the same width (2.20 metres) and on the same stretches as their future cycle path counterparts. They are separated from the footpath by way of a kerb and marked out by way of a 30-cm thick uninterrupted white line. They will later be transformed into cycle paths by replacing the white line by a second kerb and by elevating the cycle lane and asphalting it over.

Parking lanes, if any, will be laid out to the left or right of the cycle lane. Studies show that the well-known crossing problems involved in cycle paths cannot be solved by cycle lanes either, even if the cycle lanes tend to separate the traffic flows. Then there are the problems given by people who park their cars wrongly because cycle lane and parking lane are both on the same level. The normal difference in height between cycle path and parking lane should be 7 to 12 cm. According to Niels Jensen, Copenhagen urban traffic planner, these experiences are among the reasons why the Copenhagen cycle lane programme is not being continued as intensively as originally planned. The experiences with blue markings on crossings are positive, however. Studies show that they improve safety. Especially the number of accidents between cyclists continuing their way and oncoming cars turning left has clearly dropped.

General and increasing bicycle use

Since the middle of the nineteen seventies bicycle use in Copenhagen has been on the rise again, especially in the city centre and the first layers encircling it. Counts performed on beltways around the city centre clearly demonstrate this at a roughly stable number of citizens (twelve-hour counts in two directions):

Figure 5. Development of bicycle use in Copenhagen, 1970-2000



The bicycle share in all trips has been slightly over 20% in the last few years. It is considerably higher in commuter traffic however: 32%, calculated on all Copenhagen job positions. Commuter cyclists themselves say that they cycle because it is fast and easy, although the health argument plays an important role as well - and the low costs of course.
At such percentages it is almost inevitable that bicycle use is high among all age and social categories. Especially in the last few years bicycle use among older people has been on the rise. Cyclists are evenly distributed over all income categories, unlike car owners (mainly higher incomes) and users of public transport (especially lower incomes).
In plain words: cycling is 'socially accepted'. In Copenhagen it is emphasised that it is not unusual for ministers and city executives to be seen cycling to work.

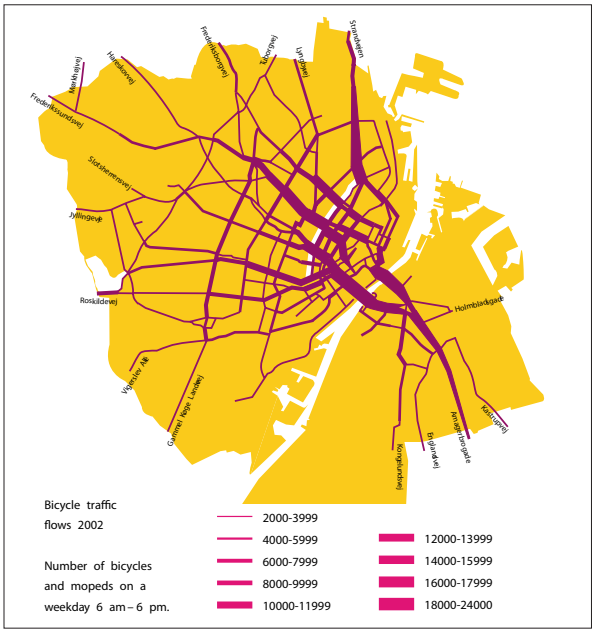
Perfect monitoring

A striking role in Copenhagen cycling policy is taken up by monitoring. Apart from paying much attention and money on this, the municipality quite consciously uses its results as input for policy choices as well. Two municipal documents play a central role here. In the first place there is *Bicycle Account 2002*, the monitoring report (issued in 2003). Second there is *Cycle Policy 2002-2012*, the new 2002 cycling policy plan.
Ever since 1995 Bicycle Account has recorded developments in bicycle use and safety, as well as facts about the immediate results of municipal cycling policy. However, the most important and most frequently used part of Bicycle Account is a standard bicycle satisfaction poll. Here, cyclists award scores on eight essential points of cycling policy:

Table 10. Scores awarded by cyclists on eight essential points of Copenhagen cycling policy, 2002-1995

	2002	2000	1998	1996	1995
Copenhagen city for cycling	8	8	8	7	6
cyclist sense of security in traffic	6	6	6	6	5
Length and with of cycle tracks	5	6	6	6	6
cycle track maintenance	5	4	5	5	-
Road maintenance	3	2	3	2	-
Feasibility of combining cycling and public transport	5	5	4	5	4
Bicycle parking in town	3	4	3	4	4
Municipal information on traffic planning	4	3	3	3	2

Map 13. The intensity of Copenhagen bicycle traffic



The overall judgement of the cyclists (Copenhagen Cycling City) is high and has been rising since 1995. The lower 2002 judgement concerning the length and width of cycle paths could in the view of the researchers be due to the increase in intensities leading to cycle path congestion on certain stretches during rush hours. After all, cycle paths with a width of 2,20 metres can only handle ca. 2,000 cyclists per hour, while the rush hour load on the busiest stretches is ca. 2,300 cyclists. Widening to 3 metres is therefore desirable here.

2002-2012 cycling policy plan

The aims of the new bicycle plan are familiar: higher speed, more comfort, more safety and ((exactly) because of this) more bicycle use. Interesting is the way in which Bicycle Account is put to use when implementing these aims. First there is its focus on present cyclists. One fifth of the cyclists namely does not at all find Copenhagen a pleasant city to cycle in. This group must be prevented from giving up by way of concrete improvements. The next swing is toward six factors that decide the degree of bicycle use, and for the above group as well: 'Safety and a sense of security, effective travelling speeds, health, comfort and the cycling experience are all significant factors if cycling is to prove competitive. The quality of bicycle transport is thus crucial to Copenhageners' decision to cycle or not.'

It is this subjective *sense of security* that is taken very serious in Copenhagen. Whether this is rightful or not, a sense of insecurity results in fewer bicycles than possible. From an objective point of view we see a declining number of victims among cyclists (40% fewer serious victims in ten years), resulting in a sharply declining risk when we consider the increasing numbers of cyclists (+25%). Despite all this, the awareness of security is far from optimal. The bicycle plan proposes not to search for an increase in security (awareness) by way of realising cycle paths, but to focus on crossings instead. Apart from projected security improvement, another target should be shortened waiting-times. In fact, the only real opportunities to increase speed are found at crossings, now that the cycle path network is almost completed and all one-way streets in the city centre are open to cyclists from both ends.

Comfort is another aspect worth considering, as *Bicycle Account* shows: more than half of the cyclists is dissatisfied about maintenance and the municipality appears more than willing to do something about this in its bicycle plan.
In this respect *Health* and *cycling experience* are arguments, or values, for individual cyclists themselves rather than footholds for concrete measures.

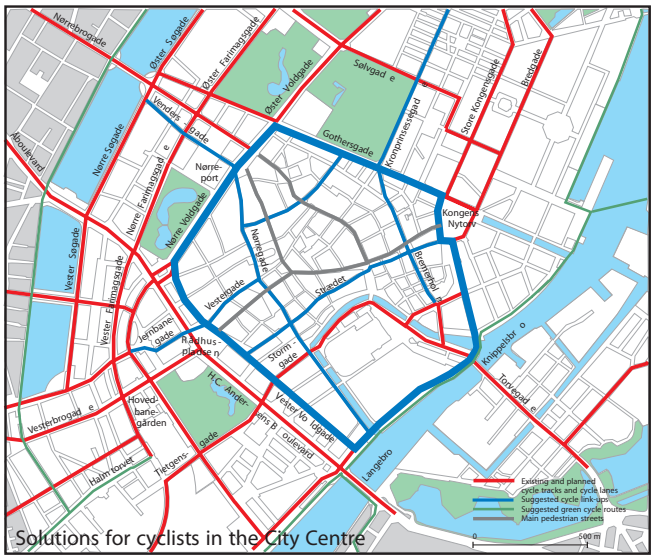
Based on this analysis, the bicycle plan identifies measures in nine themes:

1. Cycle paths and cycle lanes
   By the end of 2001 there was a total of 307 km cycle paths and 9 km cycle lanes, with another 51 km to be added over the next fifteen years (costs: over € 16 million).

2. Green bicycle routes
   The main purpose of green bicycle routes are recreational, and concern longer distances. They are high-quality routes, following their own course as much as possible, at minimal stopping frequencies. In 2000 a plan was accepted to realise 21 of such routes, each at an average length of 5 km. It will be quite a few years before all this is realised; costs are estimated at almost € 70 million.

3. Improving bicycle conditions in the city centre
   Many cycle lanes have been laid out and one-way traffic restrictions have often been undone. Only very few tasks remain.

Map 14. Solutions for cyclists in the city centre of Copenhagen



4. Bicycle - public transport combination
   Promoting the bicycle - public transport combination had already been a spearhead in the 1998 public transport plan. It is now possible to take bicycles on trains in most situations (except for some trains in rush-hour destinations). New train components have often been equipped with proper bicycle sections now, also in the new underground. From now on there will be more attention to bicycle parking near railway stations - and Bicycle Account shows the severe need for this.

5. Bicycle parking
   There are now 3,300 bicycle parking places in the historic city centre; 400 were added over the past two years. The encircling layers contain another 850 places. All this is not even nearly enough, just read the Bicycle Account assessments. An action plan will be prepared on the basis of detailed studies with a view to speed up the realisation of more facilities in the locations required.

6. Improving traffic signals at crossings
   The by now well-known measures must be realised at far more crossings: retracted stopping lines for cars (4 metres between stopping line and pedestrian crossing), blue crossing lanes and advance-green lights for cyclists.

City bikes

The Copenhagen city bikes are known all over the world, especially among tourists. A true attraction by now, these 'white bicycles' (2,000 at present) are now available at 110 locations in the city centre; the area in which they can be used freely and for free. Only a small deposit is required (a DKK 20 coin).
The Copenhagen white bicycle project initially knew the same development as did many similar projects elsewhere in Europe: many technical shortcomings and massive bicycle theft almost forced the city to stop it. However, by 1996 important technical improvements were put in and theft was brought down (by stepping up control outside the using area).

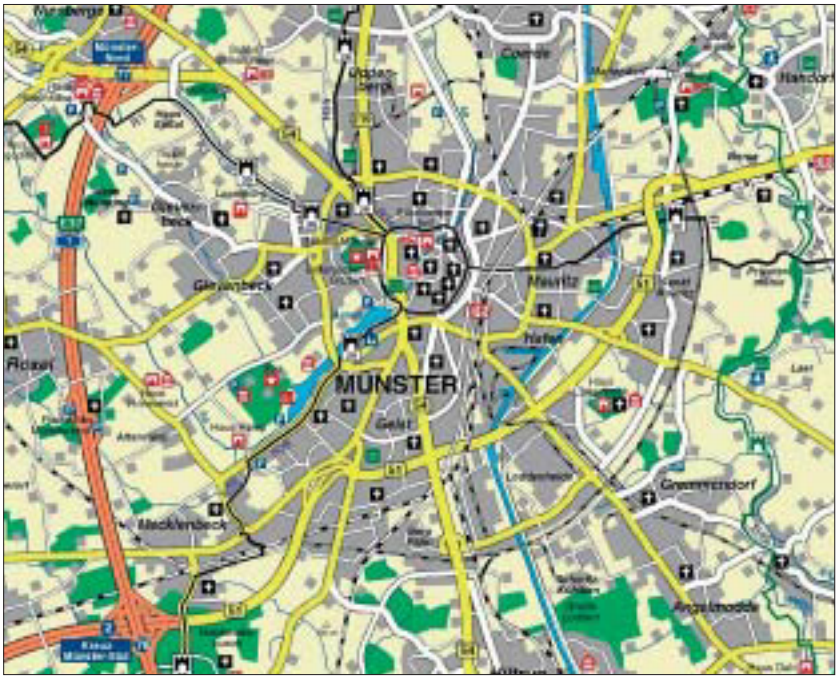
7. Better maintenance of cycle paths
   Cyclists' assessment of route maintenance has been low for a long time. This is partly due to the heavy impact of bad short-distance road surfaces. It is a fact that 82% of the routes is in good, and 13% in an acceptable condition, also because of the efforts put in over the last few years (€ 4 million in two years). The annual need will now be ca. € 1 million to slightly improve and conserve maintenance. Another important precondition is the function of an official specially appointed to inspect all routes each year, and that bad situations are instantly tackled.

8. Better cleaning of cycle paths
   A plan has been made to sweep the ca. 50 km cycle path that appear to litter up most quickly also during weekends. Snow-clearing will be done earlier in the mornings, way before the rush-hour. Sweeping and snow-clearing now cost over € 1 million each year.

9. Campaigns and information
   There have been regular promotion campaigns since 1995, such as a winter bicycle campaign, a health campaign and a company bicycle action. Next there is the annual *Cycling to Work* action, joined by ca. 15.000 workers in 2001. There has also been an Environment Transport Week for the last few years, including various activities like a car-free weekend in the city centre. Plans for the future include greater attention to specific target groups - especially immigrant citizens - who 'undoubtedly' cycle less frequently. The annual promotion campaigns and information budget is over € 100,000.

9. Münster: Germany's n° 1 cycling city

Either it rains in Münster, or its bells are tolling. This is what the Germans say about this Westphalian city. And cycling being done everywhere, one could add, for bicycles have been predominant in its streets for many decades. Bicycle use even rose further during the past twenty years. This has obviously been the result of proper cycling policy as well. A good reason to go and have a look around this city, where the degree of bicycle use is considerably higher than in any other German city.



Map 15. Area Münster

At first sight the flat surrounding landscape, brick houses, stepped gables in the Prinzipalmarkt and the great amount of cyclists give Münster the appearance of a Dutch, rather than a German city. This first impression becomes even stronger when we see cycle path congestion during rush-hours and parked bicycles shattered all over. By the beginning of 2004 Münster was twice elected cycling city n° 1. First by cyclists on the occasion of the Fahrradklimatest, organised by the ADFC cyclists' union, BUND (the German Friends of the Earth) and the ministry for the environment; a few weeks later by experts, at the initiative of ADAC, the German Automobile Association. We can therefore conclude that cycling is the thing to do in Münster: This has been so for ages. The city already won the *Fahrradklimatest* back in 1991.

Münster citizens grab their bikes for ca. 27% of all their trips. The bicycle share for local trips - relatively frequent in Münster - is now ca. 35%, a considerable rise during the last decades. See Table 11.

Table 11. Münster citizens' transport mode choices for local trips, 1982-2001

	share in trips (in %)			
mode of transport	**1982**	**1990**	**1994**	**2001**
car	39.2	38.3	37.3	40.5
public transport	6.6	6.6	9.5	10.9
bicycle	29.2	33.9	31.7	35.2
walking	25.0	21.2	21.5	13.4
total	**100.0**	**100.0**	**100.0**	**100.0**

Source: Municipality of Münster, Verkehrsbild Münster 2001

This increase was partly caused by a continuous decline in walking; a development that also resulted in more car and public transport use. It is likely that the bicycle has lost some ground to public transport, which was improved, also with the early '90s introduction by many cities of a cheap season ticket for students. In 2001 the bicycle share varied between 17% in business traffic and 50% in commuter traffic. Münster most likely is the only German city regularly conducting mobility behaviour polls among citizens, visitors and commuters. The results obtained are a sound basis for traffic policy and its resulting decision-making process. Bicycle traffic is integrated in polls and policy alike.

Münsterland city centre

A 1,200-year-old former Hanze city, Münster is a solitary, urban centre in Münsterland, with its predominant agricultural character. The city is situated on a junction of roads, railroads and the Dortmund-Ems canal between the Ruhr Area and the North of Germany. In the present spatial structure and the radial road pattern we still recognise the development of this city into a central location of the Münster principality. The railway network arose in the nineteenth century. Two ring roads were laid out after 1901: one surrounding the historic city centre and one surrounding the nineteenth-century suburbs. A centre of knowledge, administration and service for a region of over 1.5 million inhabitants, Münster offers employment to over 150,000 people, 66,000 commuters among them. Its university, seven high schools and centres for research and technology transfer make Münster a true city of knowledge. Ca. 60,000 students and 33,000 school pupils, partly originating from the region, make up for a relatively young population: half of the inhabitants is below thirty. After a strong increase between 1945 and 1975 (from 76,000 to 262,000) the number of citizens rose only slightly in the past thirty years, until the present 280,000.

Reconstruction

63% of the city was destroyed in 1945, and even 91% of the heart of the city. For practical reasons and because of a certain predisposition to days long gone it was decided to reconstruct the city centre in a traditional way, maintaining the existing street and plot pattern and reproducing the pre-war city image. This in contrast to other German cities, where the ideal of the "Autogerechte" or car-adapted city characterised reconstruction activities. Building density in the quarters surrounding the city centre was enlarged by constructing higher buildings than before the war. Bicycle traffic became an obvious component of general traffic policy, and all main roads were given adjacent cycle paths for reasons of traffic safety. With bicycles becoming obsolete elsewhere and many bicycle facilities disappearing between the '50s and '70s to make room for cars, the Münster bicycle facilities were properly maintained and steadily expanded.

Lambertkirche

photo: Presseamt Stadt Münster

Promenade

Why? Presumably because 'bicycles just happened to be there'. This gradually resulted in a coherent network of cycle paths, connecting all quarters with the city centre. The Promenade on the former ramparts is now a through priority bicycle route functioning as a green ring road encircling the ancient city centre. 12,000 cyclists make use of it on busy weekdays. Although citizens and politicians often prefer the Bordsteinradwege - mostly narrow, through cycle paths on the pavement - (non-compulsory) cycle lanes have been laid out along main roads as well since 1996. Most of them are wider and have better cyclists handling capacities. Apart from these main roads a secondary network of connections through 30 km/h areas has come into being since the early '80s (containing bicycle streets as well), added by pedestrian areas, parks and so on. The fine mesh of this network results in direct connections and it limits unnecessary detours.

Bicycle laboratory

In the early '80s cycling was given a boost. First because of growing environmental awareness, second because of the growing realisation that traffic problems cannot be solved by just building more roads and that increased bicycle use can improve a city's accessibility and liveability. The room offered by the traffic regulations to try out new bicycle measures was fully used: bicycles from both ends in one-way streets, bicycle streets, temporary access to pedestrian areas for cyclists, cyclists on bus lanes, buses on cycle lanes and so on. A special point for attention was the safe shaping and regulation of crossings. Nearly all regulated crossings of the main road network have separate traffic lights and regulations for cyclists; a green wave for cyclists is no exception. There are 'bicycle sluices' resembling an OFOS, ensuring that cyclists are given green before the other traffic participants and can in this way turn left safely. Since the late '80s the ministry of traffic of Nordrhein-Westphalia has supported these 'experiments' to allow other cities to profit from the experiences in Münster. In the scope of a programme on bicycle-friendly cities and communities in the area, named *Fahrradfreundliche Städte und Gemeinden in Nordrhein-Westfalen* Münster became one of the first model cities to be given the task to prove that an increase in bicycle use is also possible at an already existing high degree of bicycle use. Many of the measures tried out in Münster and the other model communities were adopted in 1995 within new concept guidelines and in 1997 within the updated version of the road traffic regulations.

photo: Presseamt Stadt Münster

Bicycle parking facility near the railway station

Bicycle parking

Bicycle parking has long been on the Münster agenda. This is inevitable, as the city centre and the station area are more or less fully scattered with parked bicycles and bicycle theft is high. The policy is fairly traditional: there are bicycle stands near all main destinations and short-term parking zones and tow-away actions in the station environment. In the early '90s guidelines for the number and quality of bicycle parking facilities near renovations and new constructions were included in the local building decree. In 1999 a fine bicycle parking facility was opened near the railway station, the largest in Germany, offering capacity of 3,300 parking places. What was hoped for was a solution to the ever-growing chaos of parked bicycles in the station square. Soon after its opening the parking facility had an average occupation of 80%. 96% of its users are permanent customers; over 70% are commuters who use their bicycles for train aftertransport.

This bicycle parking facility resulted in more bicycle use. One third of the customers are now making more frequent use of their bicycles. One fourth of them had not even used their bicycles at all until then. In spite of the success of this bicycle parking facility, the number of bicycles parked in the station square shows no sign of decrease at all. The conclusion therefore is that many more people are now coming to the station by bicycle than in the past. The favourable experiences with this parking facility have increased the attention given to the bicycle parking problem. By now there are political initiatives to build a new parking facility east of the station, a municipal policy document on bicycle parking is almost finished and soon there will be an electronically surveyed parking facility for 500 bicycles below the Prinzipalmarkt in the city centre.

Integral traffic policy

Like in many other German cities in the '90s, Münster traffic policy transformed from demand-following towards more controlling. The main objectives of the *Verkehrsbericht 1993* traffic report were: optimal use of the existing traffic space and guaranteeing the city's liveability and accessibility. In concrete terms this meant replacement of as many car rides as possible by environmentally friendly *Umweltverbund* trips: walking, cycling, public transport and combinations of these three. What was realised was that already far beyond the city measures were needed to allow fewer cars in the city centre, that the traffic function must decrease and the staying function must increase when approaching the city centre, and that a stricter parking regime and higher parking charges are necessary.

Most of these measures have now been implemented. The car-restricted, partly car-free city centre can no longer be traversed straight by car. By bicycle this is possible, although at certain times on a few routes only. Recent car parking policy aims to give the ring road encircling the city centre the function of a parking belt, lined with parking garages and parking places serving as first relief for most traffic bound for the city centre. Surely this does not concern all car traffic, as a few parking garages will remain in the city centre. And even one more will be added. The parking belt comes as an addition to earlier measures - stations outside the city and transferiums on the edge of the city - serving as first relief for visitors and commuters from outside the region.
Only part of these measures have been successful. Especially the transferiums have not yet generated the desired response. The *Verkehrsbericht 1993* traffic report introduced a controlling form of parking policy, differentiated in target groups as regards charges, walking distances, parking duration, permits and so on. All over the city there is the principle of resident parking or paid parking. In the old city centre the parking charges are € 0.50 per half hour or a maximum € 10 per day; half charges apply outside this area. The parking policy also encompasses private parking places. Whereas many German municipalities apply a compulsory minimum number per building, Münster has set a maximum instead. If this maximum should result in a deficit, the building owner will have to pay the municipality for laying out public parking places. Münster laid down in a local act that part of the returns can also be used for public transport and bicycle measures. Experiences with the measures taken are positive.

Spatial policy

Although less and less a truly compact city, Münster policy has consistently aimed toward attracting major economic and social facilities (service, trade, administration) in or near the city centre or along radial main roads. We find manufacturing industry mainly along the north-south axis and near the port. Like other cities, Münster has been characterised by increasing suburbanisation since the '60s. Especially young families are moving to the surrounding municipalities, but will retain their job locations in the city, resulting in a sharp increase of car commuter traffic. The increasing burden felt as a result of commuter traffic in the late '80s principally resulted in an urban trend swing toward 'inside development'. So far this has been reasonably successful: 71% of the population still lives within a 6-km radius from the city centre. As a result, many trips are short and within cycling distance. In the *Flächennutzungsplan 2010* determined in 2003 (comparable to a structure plan) the key words still are: increased mingling of urban functions, short distances, high speed, decentralised concentration, traffic, space and energy-saving spatial structures and so on.

photo: Presseamt Stadt Münster

Interior bicycle parking facility near the station

Success factors

The spatial structures and young population of Münster are good preconditions for a high degree of bicycle use. An essential influence is Münster's uninterrupted bicycle tradition, the fact that the bicycle never disappeared from the street picture or the political agenda and that cycling policy has always been considered an integral part of overall traffic policy. The fact that there has for decades been a broad and permanent executive, official and social basis for the bicycles has without any doubt contributed to cycling policy quality. Right now, following two political changes, its town hall basis appears less firm. Nonetheless, the executives in charge of urban construction and traffic - having formed part of the same department for years - can remain providing continuity and quality. As regards cycling policy as such, the increase of already high bicycle use during the '80s and '90s can partly be explained by the expansion of the measures repertoire, considerable attention to the directness and coherence of the cycling network and strong orientation on the customer (take for instance the station bicycle parking facility). The effects of the above situation are enhanced by measures in the broader area of traffic, transport and urban construction.

10. Freiburg: stable policy and increasing bicycle use

More than ten years ago the Dutch Ministry of Transport and Water Management portrayed a number of cycling cities inside and outside the Netherlands, including Freiburg. Especially the strikingly positive image of the bicycle within local community was very characteristic for this south-German city at the time; it was not just an essential element of its urban traffic system. So let's look at the development of bicycle traffic and bicycle policy in Freiburg during the past ten years.

photo: Graham P. Smith

The blue bridge over the railway with on the right the railway station bicycle parking facility 'mobile'

The fact that environment-friendly modes of transport play a central role in Freiburg instantly jumps into the view of visitors arriving by train. The railway tracks of the Central Station are covered by the tram bridge giving direct access to the platforms. Next to this we see the bicycle bridge with Mobile in between, the new bicycle parking facility for one thousand bicycles. It offers all kinds of services to cyclists and public transport users. Whoever approaches Freiburg via the internet will soon get a picture of the central role of public transport and bicycles as well: what we see on the site is pictures of cyclists and trams and we find lots of readily available information on what Freiburg has to offer to cyclists and public transport users. Citizens are invited to join the discussions on the future development of their city. This detailed opinion-shaping process is currently taking place in the scope of the new traffic development plan named *Verkehrsentwicklungsplan 2020* and the new *Flächennutzungsplan 2020* (a kind of structure plan).

Pleasant conditions

Freiburg is a flourishing city with a pleasant living climate in attractive surroundings: the Black Forest, the Vosges, the vineyards and orchards of hilly Markgräflerland, the Alsace and Switzerland are close by. With its 1,800 hours of sun per year, South-Baden is the region with the most pleasant climate in Germany. Cycling contributes to this living climate as a piece of mosaic, in the widest sense of the word. Freiburg (213,000 inhabitants) forms the economic, scientific, cultural and administrative centre of South-Baden in the Upper Rhine

Plain. The city offers jobs to ca. 120,000 people, slightly more than half of them commuters, most of them from within the region. The service sector and especially many small technological companies are the backbone of the economy. 30,000 students at the university and the various high schools make Freiburg a city of knowledge. Since 1950 its population has grown by more than 80% and this growth still continues. Freiburg is the urban region having the largest growth percentage in the area of employment in Baden-Württemberg. Yet it remains a compact city, and distances are short. 90% of the inhabitants live within a 7.5 km circle around the market with its gothic cathedral. This is the area where we find most job locations. Add to this the flatness of the city area, and you have proper conditions for bicycle use.
The current traffic policy of Freiburg is based on the 1989 traffic plan. Its main purpose is to guarantee the city's liveability and accessibility by creating attractive alternatives for cars. In the past ten years the realisation of this plan has just been continued. By now most measures have been implemented and they have proved effective - especially regarding their mutual influence on each other. The main points of this traffic policy have always been: expanding the public transport network, completing the cycling network, realising 30 km/h zones in staying areas, limiting the number of lanes on some main roads or narrowing them down, and applying a controlling car parking policy. The old objectives and measures are updated with the revision of the "Verkehrsentwicklungsplan" (traffic development plan).

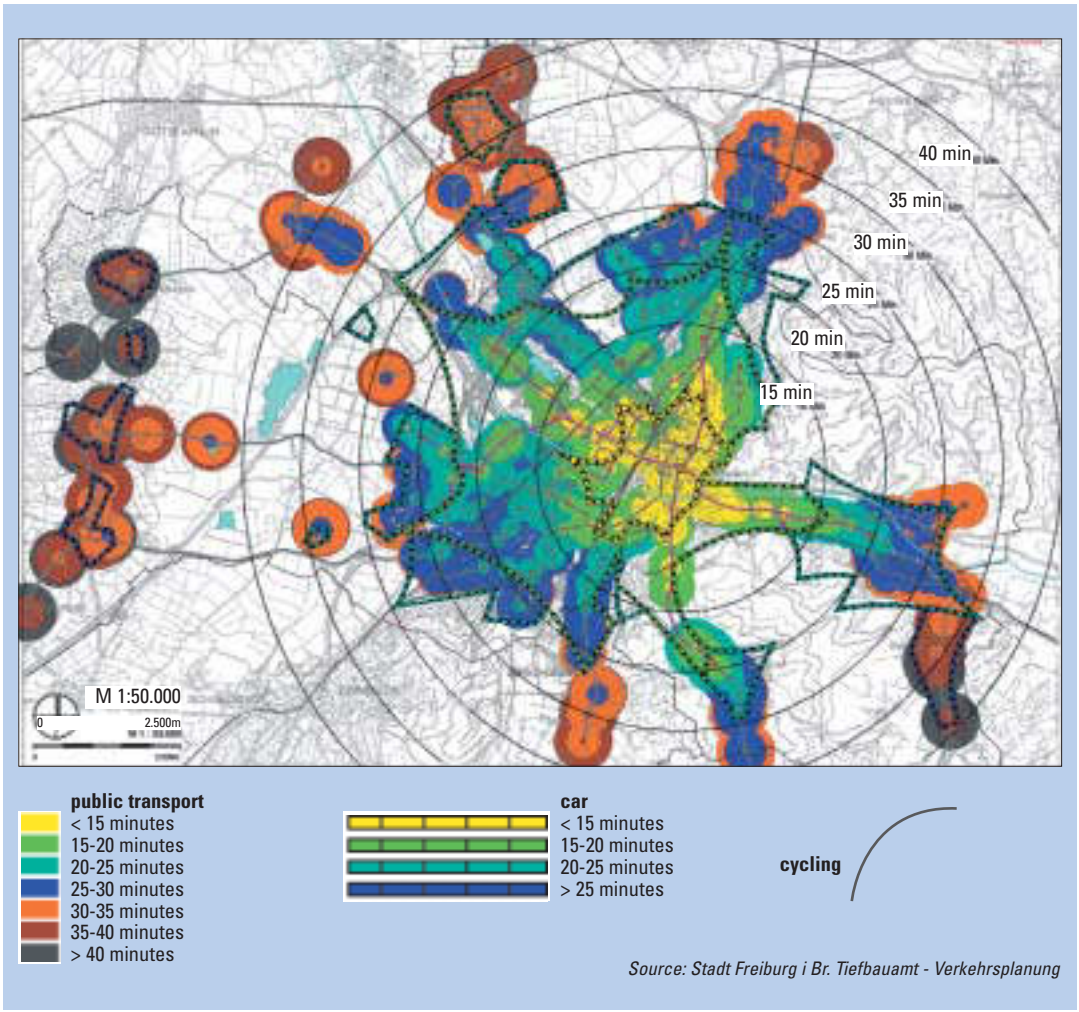
Cycling network

Since 1976 Freiburg has been conducting an active cycling policy at an annual investment of € 836,000. In the past ten years a considerable effort has been put in towards further expansion of the cycling network. A few missing links excepted, this has resulted in a coherent, fine-mesh cycling network, connecting all quarters with the city centre and with each other. This cycling network now has a total length of 500 km, of which 160 km are cycle paths (114 km along main roads, 46 km autonomous), 130 km through 30 km/h areas (of which 90 km are cycle lanes) and 210 km on country roads. It is now possible to traverse the city by bicycle without any interruption in an east-west direction, using the car-free Dreisam bicycle route, a wide road lining the bank.
In spite of all this the municipality of Freiburg is forced to continue working on its cycling network, as many bicycle facilities no longer meet current quality demands. Due to intensive bicycle use certain stretches suffer from capacity problems as cycle paths plainly are far too narrow, especially those originating in the '60s. On the westbound stretch of the busy ring road - lots of cars as well as bicycles - around the car-free city centre the situation is bound to improve greatly, soon. The municipal council namely has decided on a city boulevard offering ample space to cyclists and pedestrians. "The usual cycle paths on pavements lead to many conflicts between cyclists and pedestrians," Hendrik Schmitt, bicycle coordinator of the municipality of Freiburg explains. "To prevent this we project cycle lanes on main roads instead of cycle paths on pavements, wherever we can."

Travelling times mapped out

The realisation of this coherent, fine-mesh urban cycling network with direct bicycle connections and the measures taken for the other modes of transport have clearly improved the competitive position of the bicycle. Within the scope of an inventory required for the revision of the *Verkehrsentwicklungsplan* another detailed study was performed in 2002. It concerned the time each mode of transport took to travel from certain city locations to the *Bertoldsbrunnen*, a tram-and-bus node in the heart of the city. See Map 16.

Map 16. A comparison of travelling times by public transport, bicycle and car in Freiburg



Source: Stadt Freiburg i Br. Tiefbauamt - Verkehrsplanung

This map shows that bicycles are the quickest mode of transport for distances until ca. 3 km: from the first layer encircling the city centre it is a fifteen-minute bicycle ride to the *Bertoldsbrunnen*. This node is within thirty minutes' reach by bicycle from practically all over the core of the city, just as quick as public transport. Thanks to the presence of a few quick main roads this takes a car only twenty minutes in many cases. Public transport is quicker than the bicycle only when you start from a few immediate station surroundings in the remotest western quarters. It is not likely that there will be many cities that would even realise the value of such knowledge about competitive positions of different modes of transport. Certainly the number of municipalities that have access to details as accurate as these on travelling time requirements - and even mapping them out - must still be smaller. An example worth following!

Bicycle parking

Until ten years ago bicycle parking was one of the weak spots of Freiburg's cycling policy. There was a great shortage of bicycle parking facilities, and the existing stands often were *wheel rim killers*. This has greatly improved by now. Since 1987 the number of bicycle stands in the city centre has grown from 2,200 to an impressive 5,613 in 2004. All over the city we

now find 8,600 stands, most of these in the centres of the various city quarters and near tram stops. Bad bicycle parking facilities have been replaced by robust clamps, and near the tram termini we now find bicycle lockers as well. In 1999 a "Mobile" was opened near the railway station on either side of the tracks; this is a mobility centre for cyclists and public transport users. We find a bicycle parking facility with a capacity of 1,000 stands, bicycles for rent, a bicycle repair shop and a bicycle shop under one roof here. It also accommodates the offices of the local departments of the ADFC cyclists' union and "Verkehrsclub Deutschland", a mobility centre advising travellers and selling tickets, and a café overlooking the railway and the city. Cyclists arriving from the city end reach the bicycle parking by way of the blue bridge, made car-free at the time of the opening of the Mobile. Direct access to all platforms is possible by way of the public transport bridge.
Although the bicycle parking facilities have not yet been assessed, it is clear that there is a great shortage in many locations because they just are full, some of them even crammed. Many bicycle parking facilities still do not meet current quality demands. Reason enough for the city of Freiburg to leave bicycle parking on top of the agenda.

Bicycle use

The active cycling policy of Freiburg most certainly contributed to the fact that bicycle use has almost doubled in size since the early '80s as regards local trips. In 1999 Freiburg inhabitants took their bicycles for 28% of their local trips. This is ca. 22% of all trips. At the same time, car use for local trips dropped heavily: from 38% to 29%. All of them together, the environment-friendly modes of transport (public transport, bicycle, walking) cover 70% of all local trips. This makes Freiburg a topper within Germany. See Table 12.

Table 12. Development of the choices in modes of transport made by inhabitants of Freiburg, 1982-1999, internal/local traffic

	share in internal trips (in %)		
mode of transport	**1982**	**1989**	**1999**
car driver	29	29	23
car passenger	9	7	6
public transport	11	18	18
cycling	15	21	28
walking	35	24	24
rest	1	1	1
total	**100**	**100**	**100**

Source: Municipality of Freiburg, Verkehrsentwicklungsplan Freiburg, Teil A: Problemanalyse, p.21

To Freiburg, cycling is the thing to do for almost everybody, all the year round, for all distance categories and travelling motives. The most frequent cyclists are found in the 18-29 age group: 41%. Even the 70-plus age group take out their bicycles for a good 14% of their trips. See Table 13.

Table 13. Choice in modes of transport made by inhabitants of Freiburg based on journey purposes and local trips, 1999

	share in local trips (in %)						
purpose	**commuting**	**business**	**home-school**	**shopping**	**bring and collect**	**recreational**	**rest**
car	37	47	10	26	53	25	23
public transport	15	10	27	17	11	15	14
cycling	34	27	36	25	17	29	28
walking	13	14	26	31	19	30	33
total	**100**	**100**	**100**	**100**	**100**	**100**	**100**

Source: Municipality of Freiburg, Verkehrsentwicklungsplan Freiburg, Teil A: Problemanalyse, p.27

Integral policy

The success of this cycling policy lies mainly in the coherence of overall traffic policy. Cycling policy is an integral component of a traffic policy consistently promoted by the *Umweltverbund* environment association, while car use is being discouraged at the same time. Add to this the city's spatial policy, aiming to keep distances short to avoid unnecessary traffic. This has also resulted in new, partly car-free residential quarters like Rieselfeld and Vauban, both situated within cycling distance from the city centre, and an active location policy for large companies and supermarkets. Verena Breidt, president of the Freiburg division of the ADFC summarises the Freiburg situation as follows: "Cycling policy in Freiburg was never an issue of only one certain political party. Independent of political colouring there has always been at least someone in the past 35 years who brought attention to promoting bicycle traffic. Everyone knows what profit good liveability in Freiburg and district implies to him or her. Everyone knows some winegrower or ecological farm nearby; places just meant to be cycled to. We presume it is this unique combination of a certain degree of conservatism intent on preserving values, and critical, environment-conscious citizens that makes Freiburg so special."

11. Ghent: promoting and sensitising

Relatively compact, flat, and students all around: Ghent has good conditions for intensive bicycle use. Since 1993 the municipality has conducted an active cycling policy that makes use of these conditions. And successfully so: people of Ghent grab their bikes. And because politicians and officials have been "thinking bike" Ghent traffic policy has been set in motion. This cycling policy has resulted in a local mobility policy considered Flanders' most dynamic.

Ghent (230,000 inhabitants) lies where the Leie and Schelde rivers meet; a junction of waterways, railways and motorways in East Flanders. Its port, the metal and motor industry and the service sector - including many hospitals - are the pillars of its economy. 50,000 students at the university and three high schools and 60,000 school pupils mostly from the region make Ghent a city of knowledge and many young people. Cooperation between educational institutions and the business sector results in many starting, innovative enterprises. A shopping and entertainment centre, Ghent attracts many visitors from the region and also people coming from all over the country to its congresses and annual fair. Bicycles find their place in this lively city better and better. Right now the people of Ghent take the bicycle for 15% of their trips (walking 18%, public transport 8% and car 59%). Surely this was different once. Right until the '70s little attention was given to walking and cycling, or to the city's rich cultural-historical heritage either. Economic expansion and smooth car traffic flows topped the agenda. It was only in the late '80s, when the city was coagulating with cars, did a new awareness of public space arose. This resulted in the first urban innovations and the first car-free streets. Public space was now regarded as a whole, and urban construction and traffic plans were brought in line with each other.

The Ghent bicycle plan

In 1993, Frank Beke, alderman for traffic and public works, took the initiative to start up an active cycling policy. A daily cyclist, he knew the problems of cyclists and realised the beneficial effects that increased walking and cycling have on liveability, accessibility and safety. His initiatives gave him the nickname of 'Frank Bike' and pushed him on to become Mayor of Ghent. Voters appear to appreciate this working toward better mobility.

By the end of 1993 the municipal council approved of his bicycle plan named *Fietsplan Gent*. Its main objectives are: a secure bicycle infrastructure, a positive image surrounding the bicycle and car traffic management. The first rule that applies when implementing this plan is that each infrastructural change must benefit cyclists. For the period between 1994-2000 an annual budget was reserved amounting to € 1.24 million for infrastructure and € 170,000 for communication. This budget was intended to (co-)finance the realisation of a safe bicycle route network, a car-free city centre, 30 km/h areas all over the city, safe school surroundings and good bicycle parking facilities, increased attention to bicycle theft prevention and the renewed layout of the ring roads and major access roads. It also provided for better alignment between public transport and cycling and the creation of a bicycle culture, especially among school pupils, students and workers. Its widely-covering approach made it clear from the very beginning that this cycling policy should not be limited to pure 'bicycle measures'.

Mobility plans

The bicycle plan opened a new road for Ghent and its traffic policy. The municipal executive drastically amended its course and changed its approach of motorised traffic as well. First a city centre mobility plan was laid down (1997), followed by a plan covering the entire city (1998). This was followed in 1999 by a 'referendum for better and more public transport' and the first traffic liveability plans for staying areas. A committee was appointed for the promotion of an integral approach of all measures. It consists of employees of the relating munici-

pal services, public transport companies, district, province, and so on. This committee must first approve of all measures before they can be implemented.
By now all streets in the 35-hectare historic city centre are either car-free or car-restricted, car parking space has been transformed into attractive staying areas and the city centre is now encircled by a parking route accommodating car traffic heading for the city centre. Coming from the ring and access roads and approaching the city centre, car drivers are faced with a decreasing traffic function, an increasing staying function, a stricter parking regime and higher parking charges.

Means


photo: Ursula Lehner-Lierz

It was completely new to Belgium when in 1993 the municipal executive appointed a bicycle official, **Erwin Stubbe**, who has been pioneering Ghent cycling policy ever since. In 1995 Stubbe received the support of an administrative assistant, added by a bicycle plan promoter in 1996. This was the birth of a real 'bicycle service'. It expanded into Mobility Service when in 1997 the city centre mobility plan also demanded inclusion of the other modes of transport. In 2003 the annual budget of this Service was € 5 million, of which 29% (ca. € 1,4 million) was reserved for bicycle traffic, 35% for traffic liveability and 25% for public transport.

Bicycle facilities

Of the four main bicycle routes originally planned, three were almost finished by the end of 2003 and one completely. The plans and partial realisation of four additional main routes have also been taken up now. Major construction works like bicycle tunnels and bridges take up most time, partly due to (financial) cooperation with other authorities. On some city ring and main access road stretches the number of car traffic lanes has been reduced from three to two to make wider cycle paths possible. Other measures concern reconstruction of crossings, or less drastic steps, like laying out bicycle (suggestion) lanes and placing road markings and signs.
A big step forward was bicycle traffic from both ends in one-way streets. These streets had long since been a serious impediment to cyclists, and Ghent and Antwerp both took the initiative in 1997 to amend their road traffic regulations. By now, one-way traffic can only be imposed on cyclists in Ghent in exceptional cases and on urgent grounds. "As we had prepared a good file we were able to open up more than 500 of our 700 one-way streets to cyclists in both directions within a short time; truly a success story", says **Yves de Baets**, communication assistant with the Mobility Service. Like other cities, Ghent had always been critical of allowing cyclists in pedestrian areas. In 1997 cycling was allowed here as a pilot between six o'clock in the evening and nine o'clock in the morning, although firmly opposed by the pedestrian movement. Six months later an assessment proved that that there had hardly been any problems. From that moment cycling has been allowed at all hours, all over the full, 35-hectare pedestrian area.

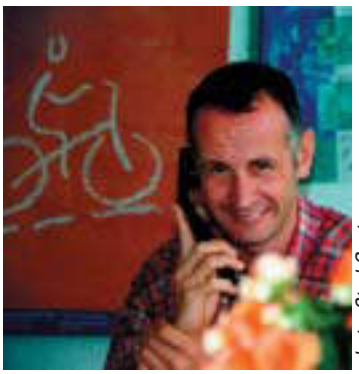


photo: Stad Gent

Bicycle parking

From the very beginning the municipality and the police have been working together toward realising a structured approach of bicycle parking and preventing and combating bicycle theft. This is done by way of bicycle parking facilities and permanent and mobile parking facilities, rounding up stray bicycles and bicycle wrecks, returning retrieved, stolen bicycles to their owners via bicycle registration and promoting the use of proper bicycle locks. By now over 6,500 bicycle parking places have been realised in more than 200 locations and 4,000 near Sint Pieters railway station, 600 of these under surveillance. A 'parking team' ensures quick placement and maintenance and works continuously on optimisation of the facilities.

Since 1998 both permanent and mobile surveyed bicycle parking facilities have been placed in locations attracting many cyclists, or during events. Cyclists appreciate this. During the Ghent festivities, a ten-day street theatre and music festival, 4,500 cyclists made use of these free facilities in each of the past two years. At a cost of under € 1.20 per bicycle this is an extremely efficient measure, certainly when compared to the high costs of free public transport offered on certain shopping days and holidays. Ghent also has a bicycle watch consisting of seven assistants. They label bicycles left behind in the street and bicycle wrecks (almost 5,300 in 2002). Labelled bicycles still found after two weeks are transferred to a depot (over 2,330 in 2002). Whoever reports a bicycle theft with the police and can describe this bicycle in detail can come to the depot to see if it is there. 154 of the 400 Ghent citizens who took this trouble could return home with their own bicycles.

Ccycle path boarding the water

Sensitising

Communication plays an important role in Ghent bicycle and mobility policy. First, emphasis was put on informing the population about the *Fietsplan Gent* and its objectives via newspapers and leaflets. In the next phase people's minds were gradually turned to a number of subjects: this is called sensitising. A number of events were organised for this purpose, like the Week of the Bicycle, the Week of the Soft Road User, the Week of Transport, Car-restricted School Days, a school rally, a bicycle bell concert for school pupils, bicycle tours and a cycle party for the disabled. Contributions were and are made to events organised by other organisations, a bicycle private project has been set up and fluorescent, reflecting clothing with the *Fietsplan Gent* logo is distributed. Calling up the people to make more frequent, daily use of bicycles was postponed until a sufficient amount of safe bicycle facilities had been provided. This appeared to be the correct approach, witness a survey conducted among cyclists. The average Ghent cyclist is not really after information; what matters to him especially is that safe and comfortable bicycle routes are realised. What he does like is the chance of venting his opinion, irritation or suggestions. An e-mail address specially reserved for this purpose receives 800 messages each month concerning bicycle and mobility policy. The cycling policy of Ghent radiates on to other cities. When in 1997 a two-day bicycle forum was organised in collaboration with Antwerp, various problems were put forward that cannot be solved at municipal level. This is due to legal obstructions: tax-related promotion, one-way roads, 30 km/h areas and so on. The bicycle forum received a lot of attention from the media and resulted in a foundation named Club of Belgian Cycling Cities. This now contains 26 municipalities. Most of the 'demands' of the past have been met by now.

Promotion

Three target groups receive special attention when promoting bicycle use:

- *Students*
  Ghent offers students some tailor-made services to encourage them to use their bicycles. In 2002 for instance a bicycle rental project was started. Its objectives were: a sufficient amount of bicycles available, reducing the degree of bicycle theft and improving overall cycling safety. Bicycles offered for hire are not all of them new, there are also bicycles that have not been retrieved from the depot and that have been patched up. During the first year over 1,000 students hired a bicycle for € 5 a month. Little use was made of the possibility of parking bicycles in the bicycle depot during college-free periods.
- *School pupils*
  The 2002 project named Safe School Surroundings is a structural approach by Ghent of home-school commuter traffic: schools are counselled by a consulting agency when assessing traffic safety in their school surroundings and when preparing a school transport plan. School routes are analysed, choices of modes of transport are studied and recommendations and suggestions for changing mobility behaviour are given to the school and the parents. Suggestions also concern integration of 'traffic' in education. The school transport plan can also be used for subsidy applications to the Flemish District for proposed measures. It is intended to give each school its turn in a few years to come.
- *Civil servants*
  Civil servants of Ghent can use a section of the car parking garage of the administrative city centre. This has been converted into an electronically secured bicycle facility with its own entrance and equipped with dressing-rooms and showers. Employees can also use service bicycles and apply for a 'company bicycle', new or restored. Over 700 civil servants make use of this. When Belgium introduced the tax-free bicycle allowance in 1998 (€ 0.15/km, maximum 10 km/day) the city of Ghent instantly declared this applicable to civil servants who walk to the office. An estimated 50% of the civil servants actually makes use of this arrangement. Surveys prove, however, that this allowance must be far higher if civil servants are to change their mode of transport.

Effect

Although since 1977 the number of citizens in Ghent fell continuously, it has been growing slightly again since 1999. The ratio of vacant shops is clearly lower than elsewhere in Belgium. The number of visits to shops and the number of hotel nights show a very strong increase and also cafés and restaurants attract more visitors. These developments are an indication of the fact that a stay in this city has become more attractive to its inhabitants,

visitors and to companies. All this is reason enough for the executive to continue on its way and to work towards a further rise - 20% in 2006 - of the number of bicycle trips for instance. Yves de Baets: "It is one of Ghent's strongest points that everybody thinks 'bike' now. This speeds up and reinforces the process."

The traffic plan for the period between 2002-2007 *(Beleidsplan voor een anders-mobiel denken & doen)* of new alderman Karin Temmerman distinguishes among clear political choices in transparent words. This apparently is unusual and it shows: 'There is this clearly felt fear of calling a cat a cat.'
The plan elaborates six objectives:

- Ghent and its pedestrians: can we go a little better and quicker?
  Focusing more intensely on sufficiently wide pavements.
- Ghent and its cyclists: can we go a little more safely? 20% more cyclists.
- Ghent and its public transport: can we double?
- Ghent and its cars: can we hold back a little?
- Ghent and its inhabitants: can we become slightly more liveable?
- Ghent and its parking problem: can we clear up a bit?

As regards bicycle facilities Ghent wishes to forge its good (main) bicycle routes together into an actual network soon, to realise its 'paper' street network. A few new bridges and tunnels have also been projected.

12. Comparison

Chapter 1 indicates that a 'continuous, proper cycling policy' combined with an 'integral traffic policy that allows space to bicycle traffic' have more or less proved to be the explanation for high municipal bicycle shares in 2006. The ten case studies contained in this publication should show this general tendency. On the other hand of course we find differences in these ten 'unique' cities appearing after closer study. This concluding chapter tries to summarise the parallels and differences. But it is a comparison that requires great prudence. After all, these ten 'city accounts', compact as they are indeed, do not give a complete picture. This comparison can therefore only be characterised as qualitative and far from accurate.

Prolonged interaction?

Degrees of bicycle use are high in all ten cities - even though the differences, varying from a 15% bicycle share for all trips in Ghent to 37% in Groningen, are not small either. A high degree of bicycle use and a strongly developed cycling policy more or less obviously go hand in hand. Certainly when considered in the longer run: an intensive (and expensive) cycling policy will not hold when it does not result in cycling and a high degree of bicycle use will not hold when facilities are not uplifted or maintained in a certain way. There is another, third element here: the underlying culture/tradition, the general attitude of citizens, officials and politicians towards bicycle traffic. In the end this culture/tradition will therefore in a way relate to actual cycling policy and bicycle use.

What we are in fact talking about is thoughts-words-actions in policy: generally-shared valuations leading to concrete measures via political choices. Table 14 shows a comparison of the ten cities on these three points:

Table 14. Comparison of the ten cities with regard to culture/tradition, political choices and facilities

	analogy	**exceptions**
culture & tradition: Bicycle use ample for decades and general accepted / appreciated	Yes, 8 out of 10 show a history of use and acceptance of bicycles	Freiburg and Ghent
political choices: For decades, traffic policy with attention for bicycle use?	Yes, 8 out of 10 to a certain extent always payed attention to cycling	Freiburg and escpecially Ghent
facilities: Good cycling network nearly completed?	Yes, 8 out of 10 nearly finished with construction	Freiburg and escpecially Ghent

Ghent

This comparison shows the same picture on all three points - which in turn demonstrates the firm bond that exists between culture/tradition, policy and use.
In the last decades Freiburg and Ghent have shown a manifest rise in bicycle use rather than a permanent high level dating way back. It would seem that bicycle use had disappeared from view in these cities more than in the other cities; not only when considering numbers of cyclists in the streets or in political terms, but also in cyclists' facilities. As a result, the task concerning bicycle facilities was far greater when cycling policy was relaunched in the '80s and '90s.
One the one hand it is obvious that the majority of the European cycling cities discussed here demonstrate a well-established history of bicycle use, cycling policy and cycling culture. On the other hand it is also right to conclude that this does not apply to all these cities in the same way. What is striking in this respect is that cities that do not so much fit this picture (Freiburg and Ghent) are also the cities that right now have the lowest degree of bicycle use. They launched or relaunched their cycling policies later than the others, and are not (yet?) on the level of the other cities.

Quality of cycling facilities

There is a great deal more to be said about facilities for cyclists and a great deal more to compare. Completeness of a network is not the same as high network quality. Quality can be expressed in terms of traffic design (width of lanes and paths, types of crossing provisions and so on), but this comparison cannot be drawn on the basis of the rough data contained in this publication. Comparing is possible in another way, namely by estimating the degree in which cyclists can participate in traffic in a safe way and without obstructions. So: the degree in which the bicycle routes of the network run by way of their 'own facilities'. A second point of this comparison of cyclists' facilities is the theme of bicycle parking: what are the capacities and how much attention do they receive in the way of policy?

Table 15. Comparison of the ten cities based on cycling network quality and bicycle parking facilities

	analogy	**exceptions**
quality of the cycling network: Specific, (separated facilities for the bike?	Limited; 6 out of 10 have separated facilities for cyclists as a standard	less 'separated': Freiburg and especially Ghent; 'separated' to a higher level: Veenendaal and especially Zwolle
facilities for bicycle parking: Massive numbers and strong attention in policy?	Yes, 7 out of 10 have bicycle parking as an important theme of cycling policy	less weight: Odense and Copenhagen (but more "bicycles on trains"); stronger accent: Amsterdam

When we go a little more deeply into this kind of comparison of bicycle facilities, the picture that remains is especially that of similarity. Still, a few more differences come to light. The lower scores of Freiburg and Ghent regarding network quality are a direct result of the comparison drawn earlier regarding network completeness. More relevant here is the exceptionally positive score of Veenendaal and especially Zwolle. These places show that the theme of 'own facilities' is now being interpreted at a higher level. So: not just constructing more cycle paths and cycle lanes, but working towards preventing cyclists from being confronted with heavy and/or fast car traffic in virtually any place along their route. In such a case much attention and money is spent on crossings - now mainly in the form of flyovers and tunnels.

The bicycle parking theme indicates a new phase in policy, first and foremost in Amsterdam. In its most recent bicycle plan, parking is now branded as theme of the highest priority.
Also the two Danish cities show something special: here, bicycle parking apparently involves far lower numbers. Odense for instance realised a 250-place bicycle parking facility near the railway station the last ten years, as well as 400 extra clamps. In Dutch cities, bicycle parking certainly appears a huge policy task, especially near railway stations. The same can also be

applied to Münster, Freiburg and Ghent; consider for instance the present bicycle parking capacity near the central stations. In Münster we see a new 3,300-place facility, in Freiburg there are 1,000 and in Ghent the total capacity near the railway station is 4,000 places.
The lower Danish figures are hard to explain. The most likely reason is that the role of the bicycle-train combination is far smaller in Danish than in other cities. On the other hand, the much larger possibilities of taking bicycles on trains (and underground and buses) most certainly play a part here.

Freiburg

Integral policy

Apart from 'continuous', 'integral' was the second key word used in our introduction to explain high degrees of bicycle use. This, admittedly, is a rather vague word. It can be concretised in three ways:

- integral as a thematic term within cycling policy: apart from gradual realisation and improvement of the 'normal' infrastructural facilities (including bicycle parking), projects revolving around technical innovation, service and promotion certainly count as well;
- integral as a term referring to the overall policy cycle: from political commitment to planned implementation and assessment;
- integral as a term within overall traffic policy. This specifically applies to the complement of the pull-policy (the honey) - namely the push-policy (the vinegar) of restricting car use, or, in more neutral terms, regulation of car using conditions.

These aspects of 'integral policy' show some less strong parallels, certainly in issues concerning cycling policy. As generally known by now, certainly via the BYPAD-programme, Danish and Belgian cities score better on non-infrastructural issues than Dutch cities.
Striking about Münster is that it conducts a sort of cycling policy that is really typical of Dutch policy.
Another striking thing - see the Odense account in the first place - is that close study of the promotional activities shows that, in themselves, these activities have a character and format that can also be considered as Dutch in a way. After all, actions surrounding school traffic, commuter traffic and company bicycles also occur in the Netherlands to some degree.
The only difference is that often they are not launched by municipalities so explicitly, and that they are most certainly not as continuous as those in Odense.

Table 16. Comparison of the ten cities based on 'integral policy'

	analogy	**exceptions**
integral cycling policy: Also attention to innovatons, services and promotion?	Limited; 6 out of 10 cities still have a nearly complete focus on infrastructural measures	to some extent Groningen and Copenhagen; stronger: Odense and Ghent
firm, systematic and enthusiastic cycling policy: From political commitment to assessment?	Limited; 6 out of 10 show clear 'holes' in their policy cycle – especially in political support or in thoroughly planned conduct of policy	clearly systematic: Amsterdam and Copenhagen; more enbedded in politics and with political 'drive': Odense and Ghent
integral traffic policy: Restrictions to car traffic in and near the city centre (parking, circulation of car traffic)?	Yes, all cities show some kind of restrictions to car traffic near the city centres	probably less restrictions in Zwolle and especially Veenendaal; clearly more restrictions in Copenhagen and Amsterdam

Where it concerns a more process-based quality of municipal cycling policy (strong political *drive* and support, knowledge and enthusiasm on the part of officials, good plan-shaping cycle) the differences seem to dominate the parallels. In the two largest cities, Amsterdam and Copenhagen, the force of this plan shaping is very striking. This may very well be necessary for large municipal civil service departments: people alone just will not do any more; a formal planning cycle is required to keep cycling policy running. Another equally striking approach is that of Odense and Ghent, where the word 'enthusiasm' indeed seems to be the essence, added by clear political support. In between we find German and Dutch medium-sized cities, where cycling policy is based more strongly on the 'bit of everything' principle. Finally the push-end of traffic policy: the degree in which the competitive position of the car versus the bicycle is at any rate not being improved. It is clear that this issue relates to city centres alone. In this respect the parallels are strong. The only thing that could be said is that Zwolle and Veenendaal impose even fewer restrictions on car use, and that it is 'cycling poli-

Amsterdam

cy under its own steam' here (with result!). It would also appear that car using restrictions are heavier in the large cities of Copenhagen and Amsterdam.

Mainly parallels

Dutch cities on the whole mainly show parallels. There is something like 'Dutch municipal cycling policy'. The two German cities are a bit like Dutch cities as regards cycling policy (especially Münster), while both Danish cities and Ghent in Belgium differ in a way. For this matter it is again Münster that approaches the Dutch cities most closely when we consider its extent of bicycle use.

When we look at all these parallels it is a fairly strong cycling tradition, expressing itself in an early, high degree of bicycle use and an early launch of the realisation of a proper bicycle route network, that seems to be essential to the differences. Especially Ghent and Freiburg differ here to some extent. In places where this early history, tradition and early network realisation are the most prominent, Zwolle and Veenendaal, we also see a (slight) deviation, in the form of interaction between an extremely segregated cycling infrastructure and limited regulation of car traffic. Finally there is the striking, specific character of cycling policy and broader traffic policy in the much larger cities of Amsterdam and Copenhagen and the striking, more integral, more 'man' oriented character of the cycling policies of Odense and Ghent.

Ghent

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  - 'Vervoerwijze Amsterdamse bovenbouwscholieren, Lopen versus fietsen: 3-1', *Fietsverkeer* nr. 4, October 2002, p. 24;
  - 'Amsterdammers op de fiets!', *Fietsverkeer* nr. 8, February 2004, pp. 5-7;
  - 'De fiets blijft het goed doen in Amsterdam', *Fietsverkeer* nr. 8, February 2004, pp. 8-9;
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