



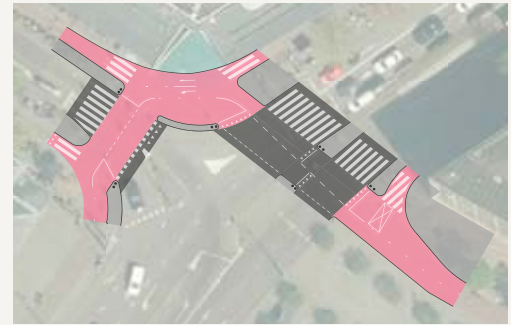
Plan Amsterdam



Cyclists the lifeblood of Amsterdam



Bicycle Mayor: 'proud of our cycling culture'



Cycle-friendly design in the compact city



infographics

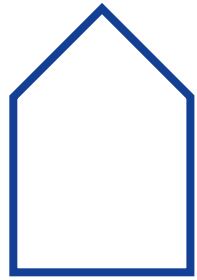
Amsterdam has a total of 847,000 bicycles. In 2015, the total annual distance covered by bike was 760,000,000 km, an increase of 56% compared to 2010. To cover this distance, a single Amsterdam cyclist would have to circle the earth 19,000 times. Source: Cycling Matters, de zoele haven / City of Amsterdam

map

The map shows the busiest cycle routes in Amsterdam (bicycle count week 2016). 28 percent of Amsterdam people report that they experience a lack of space for cyclists. This is why the city is building more fast and direct cycle routes. Map: City of Amsterdam

1 Come rain or shine, Amsterdam people will get on their bikes.

Photo: Edwin van Eis



442,693

number of households



847,000

number of bicycles



1.91

average number of bicycles per household



665,000

number of bike journeys per day



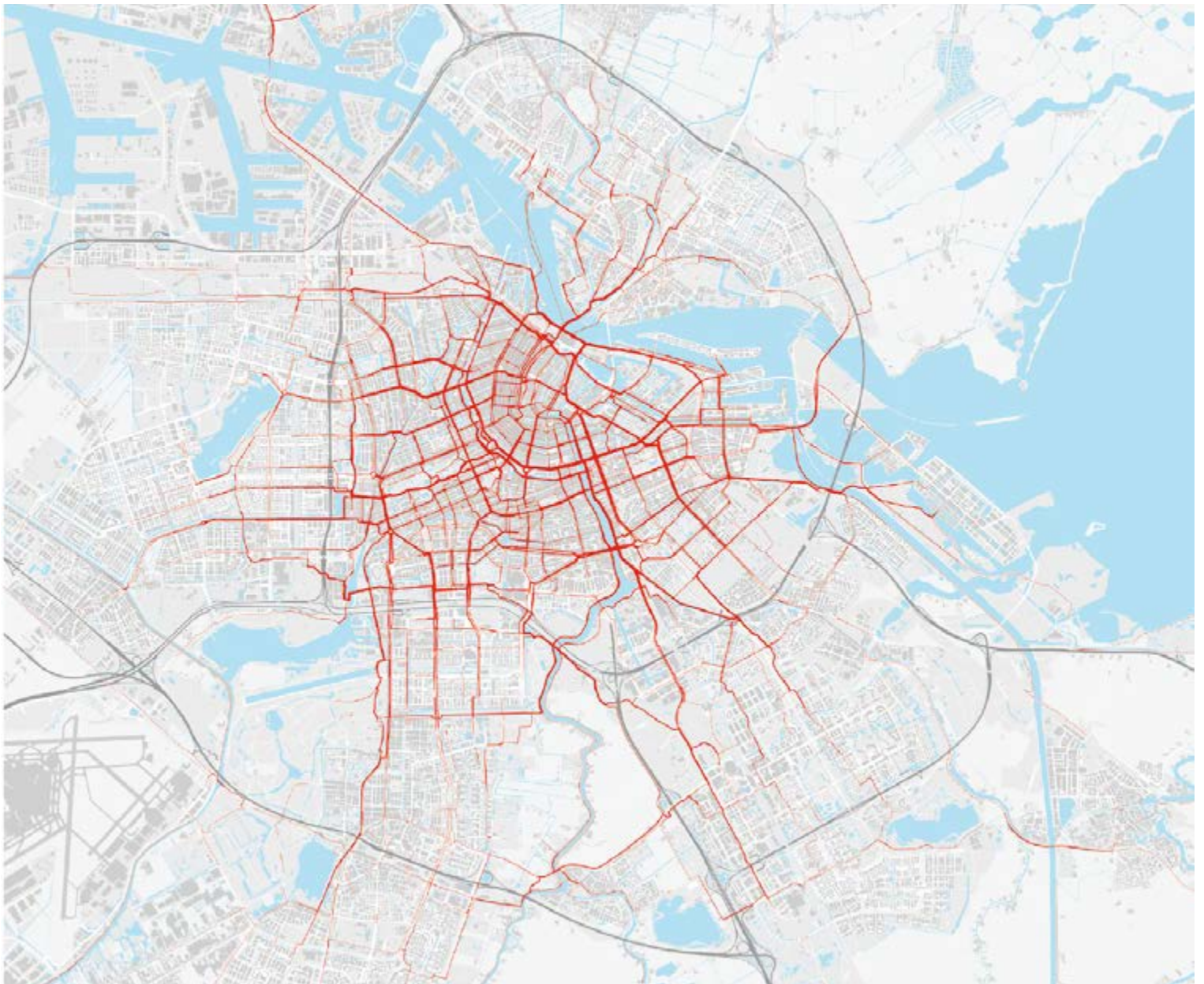
2010:

487,000,000 km

2015:

760,000,000 km

total annual distance covered by bike



Enjoy the ride

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Credits

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 **City of
Amsterdam**



1

Amsterdam people will get on their bikes come rain or shine. Anywhere in the city you can see the world passing by on two wheels: parents with their children and shopping on the back or in the front box of their cargo bikes; school children with their bags in a crate on the front, office workers in their smart suits carrying their laptops under their arms; commuters on the way to the station on their folding bikes; hipsters on their fixie bikes; couriers carrying their meal deliveries on their backs and students on their rattletrap rusty old bikes. And tourists, most of them a bit wobbly, tentative and uncertain how to negotiate their way through all this traffic.

In our previous Plan Amsterdam cycling special in 2014, we described how the city started its evolution as a cycling city as far back as a century ago. And how from the 1970's onwards, an intricate combination of public pressure, policy making and physical planning design has ensured that, despite the steep increase in car traffic, the bicycle has not been forced off the road and has developed into the most important part of mobility in Amsterdam (4/2014: *Cycling policy and design*). In this current issue, we reveal how cycling is still on

the rise in Amsterdam, and will be for the foreseeable future. Contributions include stories about the lack of cycle parking space and how this is being resolved, and what the main mobility challenges for the next few years will be.

Amsterdam's biggest challenge as a cycling city is its limited available space. The council is experimenting with new solutions to give cyclists more space, such as cycle streets and cycle-friendly junctions. Experiments and research studies have shown that the more interaction there is between cyclists, the more they will consider each other. In a city with an astonishing 665,000 bike journeys per day, this is no great luxury. If you are an avid cyclist just like all those pedalling parents, children, office workers, commuters, hipsters, couriers, students and tourists in Amsterdam, we'd like to say to you, 'Enjoy the ride, but do heed the words of our Amsterdam Bicycle Mayor Katelijne Boerma: "Be considerate to each other, also when riding your bike".'

The editor



Cyclists are the lifeblood of Amsterdam

by Vera van den Bos, Thomas Koorn and Ria Hilhorst v.van.den.bos@amsterdam.nl / t.koorn@amsterdam.nl / ria.hilhorst@amsterdam.nl

Amsterdam is a special city. Although it is relatively small in size, it's home to more than 850,000 people, attracts millions of visitors every year and harbours an astonishing amount of businesses, shops, restaurants and cultural venues. Yet despite all this activity, Amsterdam still features among the most accessible and enjoyable cities to live and work. Cycling plays a large part in this, and as the city grows and the region densifies, its importance will grow even further. What is more, cycling will be key to the city's future rate of growth and quality of life.

Unlike in the past, the council has opted to facilitate growth largely within the existing urban area, accommodating more people in the same land area and providing jobs and amenities near their homes. In this way, the commute from home to work, school, sports clubs and other facilities can be kept relatively short, providing opportunities to make mobility more sustainable. Just as in the city districts within the A10 Ring Road, cycling will naturally become the obvious choice of transport in newly developed districts as well.

Mobility challenges

Mobility and liveability will for a large part determine the speed and quality of Amsterdam's growth. In the last ten years, the population has risen by more than 100,000 people and a similar amount of jobs. The total mobility to, from and within the city has not changed in this period, but cycling has grown substantially, reducing the amount of car and public transport journeys. This high rate of bicycle journeys has not only prevented the city from descending into gridlock, it also means the city can continue to build. Currently, the construction of 80,000 new homes and related facilities

is being planned, which could lead to a 20% increase in traffic. If the number of car journeys also grew by 20%, this would lead to major congestion, pollution and crowding issues in and around the city.

Amsterdam will need to address a number of mobility issues in response to its growth:

- 1 Limit the growth of regional car traffic
- 2 Improve the cycling infrastructure and amenities to provide the necessary room for cycling to grow as a result of densification
- 3 Improve public transport and ways to combine cycling and public transport to provide a real alternative to the car
- 4 Encourage people to cycle more often

In short, it is of vital importance to Amsterdam's future that people living in the city and its metropolitan region choose alternative modes of transport to the car. The strategy is to build homes, offices and facilities in places which are easily accessible by bike or public transport. Where this is not the case, the council will invest in new cycling networks and public transport connections.

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1 Haarlemmerplein. The bicycle plays a crucial role in maintaining Amsterdam's accessibility and high quality of life.
Photo: Thomas Schlijper

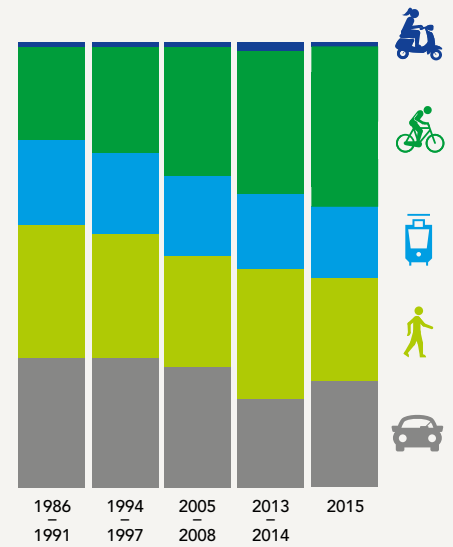
2 Chosen mode of transportation from, to and within Amsterdam by residents on weekdays. Cycling has grown while the use of the car and public transport has dropped off.
Source: Cycling Matters, de zoele haven / City of Amsterdam

3 Number of journeys (x 1,000) per hour in Amsterdam on an average weekday, 2015. Between 8 and 9 in the morning, there are 72,000 bike journeys in Amsterdam.
Source: Meerjarenplan fiets 2017-2022

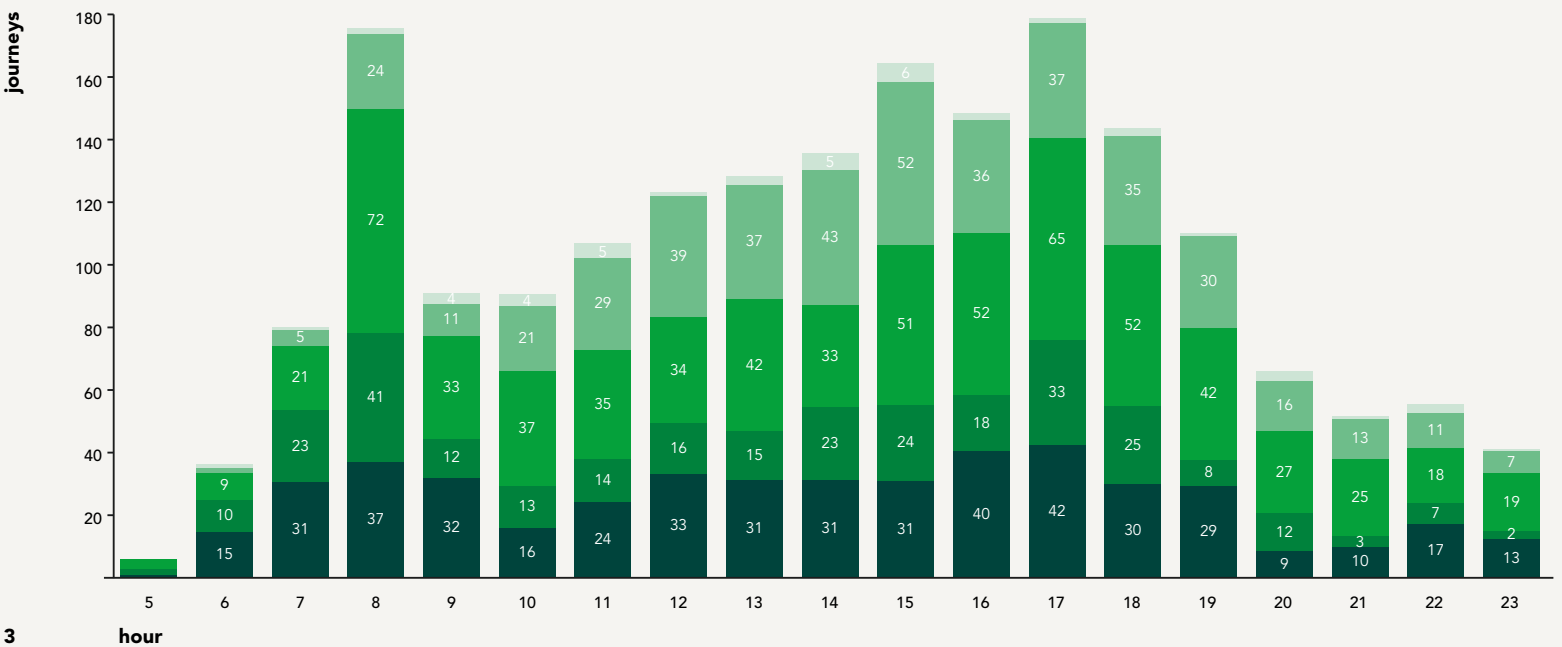
- other
- walk
- cycle
- public transport
- car



1

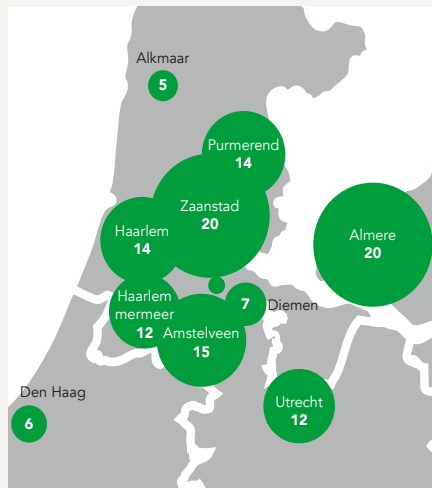


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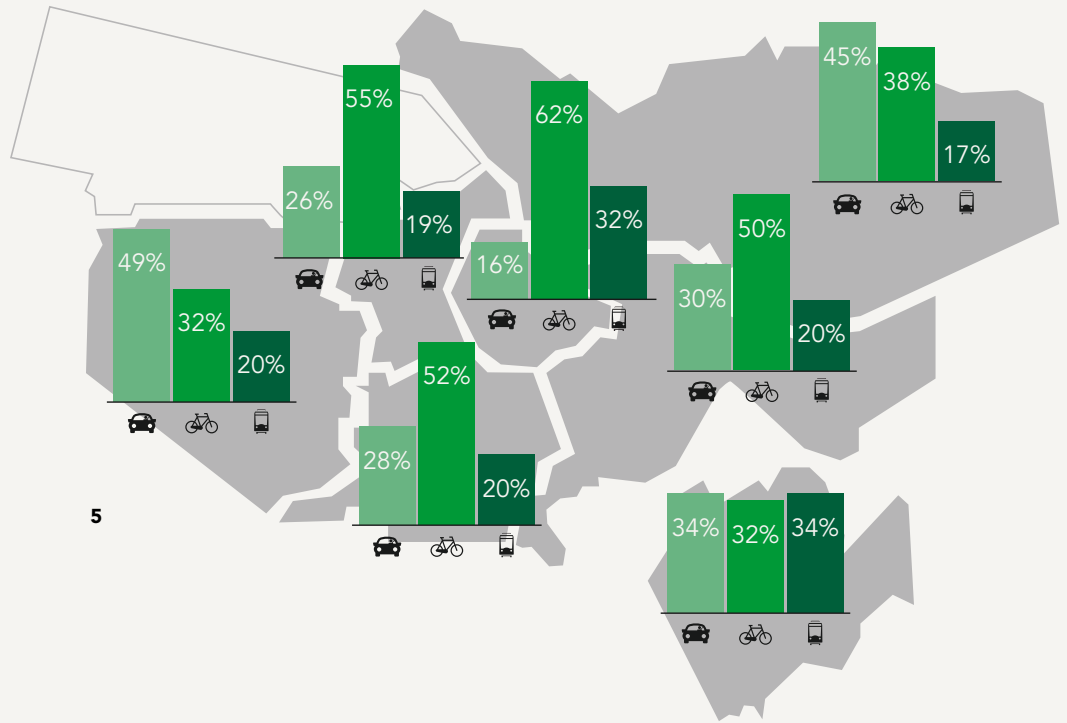
4 Daily number of journeys made by car (x 1,000) to Amsterdam, 2014. It is crucial for Amsterdam's future that more residents from the city and the metropolitan region choose alternative modes of transport to the car.



4

5 Mode of transport on weekdays for each city district in 2015. Not all parts of Amsterdam have taken up cycling in such large numbers. The neighbourhoods outside of the A10 Ring Road lag behind in bicycle use.

Source: Meerjarenplan fiets 2017-2022



5

In some parts of Amsterdam, people cycle less, especially in the post-war neighbourhoods outside of the A10 Ring Road. There are a number of reasons for this. Residents tend to live further away from work, schools and shops. The public space is usually designed for cars, with free parking available in many places. Also, these areas have a higher proportion of people with lower qualifications and different cultural backgrounds from those living within the A10 Ring Road – cycling is not a part of their daily routine. In these parts of the city, cycling can be encouraged for short distances up to five kilometres. For distances between five and twenty kilometres the electric bicycle has great potential. Longer distances can be covered by combining cycling and public transport. The last ten years have shown that the growth potential for cycling is huge, which can help Amsterdam to remain a clean and healthy city (see box-out on page 10).

Investment in cycling

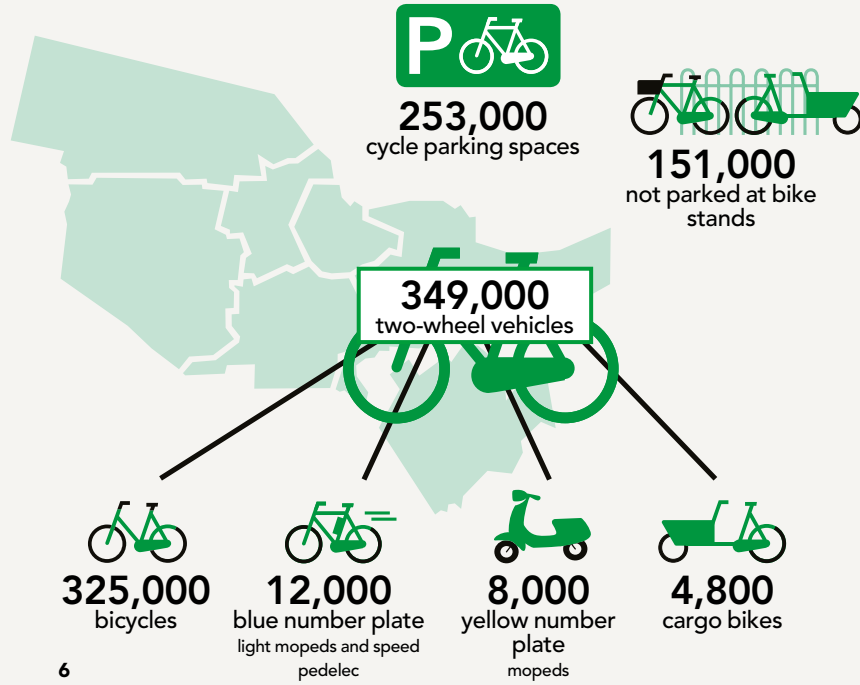
The city's *Meerjarenplan fiets 2012-2016* (long-term bicycle plan for 2012-2016) aimed to catch up and encourage the growth of cycling. At the time, the main

concern was the lack of bicycle parking spaces near public transport stations. In the last few years, 16,000 extra bicycle parking spaces have been built at Zuid, Central, Amstel and Muiderpoort railway stations. In the coming years, another 24,000 spaces are planned, mainly at train stations. The *Meerjarenplan fiets 2017-2022* (long-term bicycle plan for 2017-2022) aims to continue building more parking spaces for bicycles, especially in the city centre. In addition, cyclists will be given more space on the busiest routes. Also, new connections must be added to the cycling network to alleviate busy routes and improve accessibility. In partnership with the Amsterdam transport region, the network rail operator Prorail and the national train operator NS (Dutch Rail), the city is investing € 350 million in the next four years. This might seem a substantial amount, but in terms of public transport investment it is still quite modest. The investments in cycling allow the city to continue building and growing while keeping distances short. This also means that the much larger costs of road and rail expansion can be kept relatively low.



6 Cycle parking in numbers (rounded off), 2016. In the spring of 2016 a survey was carried out to establish the numbers of bicycles and bicycle parking stands in the public space within the A10 Ring Road. The city can use this data to better target its policies. Source: Meerjarenplan fiets 2017-2022

7 At Amstel Station and other railway stations, a great many new bicycle parking spaces have been added in recent years. Photo: Marjolijn Pokorny



6

7



8a-b Impression of the harbour front at Central Station (a). In 2021 an underground cycle parking facility will be built here, providing space for 7,000 bicycles. Another 4,000 parking spaces are planned for the north side, behind the station. Impression/design: City of Amsterdam

9 The Cuyper tunnel connects the north of Amsterdam with the rest of the city. Photo: Marjolijn Pokorny

10 Part of Plantage Middenlaan has been redesigned with separate cycling lanes and a car-free section. The green central reserve (where the trams ride) absorbs excess rainfall. Photo: Edwin van Eis



8a

8b





9



10

Compared to the previous long-term plan, the council can now better target its investments. This is because we have learned a lot more about the use of bicycles through the bicycle count week, a survey which gives insight into cycling movements, and by conducting our own research into the quality of the cycling network. By counting the number of bicycles parked in the designated bicycle parking spaces as well as those parked outside these spaces, the council can also learn more about bicycle parking behaviour. This data can be used to design, monitor and assess specific, targeted policies.

Lack of space

Currently, the biggest challenge for Amsterdam is how to deal with a lack of space. In the narrow roads of the city’s historic and pre-war areas, cyclists, pedestrians, trams, busses and cars all have to vie for the little space there is. In crowded areas, pedestrians are often blocked by bicycles parked on the pavement. On crowded cycle lanes, cyclists get in the way of each other, especially during peak times. This can lead to feelings of stress and annoyance. If we want to keep cycling enjoyable and attractive, we need to give cyclists more space. This can be achieved by improving the infrastructure, for instance by widening cycle lanes or building new bicycle parking facilities in garages or the public space.

Bicycle parking

Improving parking facilities is not restricted to bicycle parking, but also car parking, loading and unloading, the design of the public space with litter bins and other street furniture are taken into account. All users and stakeholders are consulted before deciding on the final design: local residents, businesses and visitors. City council officials organise ‘bicycle parking labs’ to discuss with them the issues and possible solutions. In this way, the Amsterdam Pijp area, which is a busy part of Amsterdam with narrow pavements and a lively mix of residents, businesses, restaurants, pubs, shops and a large daily street market, still found room to add

an extra thousand bicycle parking spaces. They also launched successful pilots introducing flexible bike parking in loading and unloading spaces for lorries. Also, the daytime market can be used for parking at night. In the coming years, Amsterdam intends to use this approach to improve another 25 areas with high pressure on bicycle parking.

As well as building new bicycle parking spaces, it is also important to make better use of existing parking capacity, for instance by improved signing and introducing maximum parking durations. In many parts of Amsterdam, bicycle parking is limited to a maximum of six weeks; at NS (Dutch Rail) stations and other busy spots, the maximum is two weeks. This is an efficient measure which generates an estimated ten to fifteen percent of extra parking space and is cheaper than building new spaces. Research has shown that there is strong support for this regulation among Amsterdam residents.

Despite their effectivity, these measures alone will most likely not be sufficient to facilitate the growth of cycling in a sustainable way. This is why Amsterdam is planning to experiment with various options to facilitate more bicycle journeys using fewer bikes. One of these experiments is to introduce bicycle sharing schemes as an alternative for residents’ second or third bikes or to replace commuter bicycles, which take up a substantial amount of parking time and space at busy rail stations.

Busy cycle lanes

In the city centre, available space is at a premium – which means we need to decide which modes of transport we want to give precedence to. On paper these choices have already been made. For instance in the historic city centre, pedestrians and cyclists will be given priority. The policy plans describe for each street which mode of transport will have priority and what the design will look like. The *Meerjarenplan fiets 2017-2022* details the busiest and most narrow cycle lanes, which will be improved in the coming years.

>

Cycling: what's in it for the Amsterdam people?

Martijn Lelieveld is senior advisor at Decisio economic research and consultancy. The statistics in this article are taken from the Decisio Bikenomics Amsterdam report, where you will find all the calculations and the assumptions they are based on.

11 Proportion of Amsterdam people feeling in (very) good health, distributed according to age and cycling habits.

Source: Amsterdamse Gezondheidsmonitor 2012, GGD

■ cycles 0 days per week
■ cycles 1 day per week

Amsterdam has almost a million bicycles. In total, they cover about two million kilometers each day. Those are astonishing numbers, especially taking into account that cycling is growing faster than any other mode of transport in the city. We all know cycling is good for people's health and the environment, and that your wallet will thank you as well. But how much value does it add in monetary terms?

Cost savings running into the millions

Between 2010 and 2015 people in Amsterdam started cycling a lot more, adding more than 300 million kilometres to their annual total. This has had many positive results, totalling more than 120 million euros, not counting the savings cyclists have made for themselves. Paradoxically, a large part of the economic benefits of cycling have gone to car drivers. Because people have cycled more, car traffic flows have improved, saving 6 million hours of waiting time, which amounts to some 60 million euros. Other advantages include savings on spending on public transport (around 27 million euros), fewer sick days and a longer life expectancy among regular cyclists (saving almost 25 million euros). Of course, by cycling more people also contribute to cleaner air,

a decrease in CO₂ emissions and reduced noise levels (15 million euros).

Although these numbers do not feature in the city's annual budget, they do give an indication of costs that would have been incurred if these cycling kilometres had not been covered, for instance costs associated with reducing air pollution. Direct cost reductions for cyclists themselves run into tens of eurocents per kilometre, saving hundreds of euros per person each year.

What is the value of space?

Economics is about making optimal use of scarce resources. If anything is scarce in Amsterdam, it has to be space. Almost a million bikes do require the necessary space to park them. Using our calculator, we can create some valuable insights. An initiative to remove derelict and wrongly parked bicycles from the city centre cost 15,000 euros but the extra space it created was equal to a saving of 45,000 euros in monetary terms. Another interesting business case is the introduction of so-called bicycle detection systems. In large cycle parking lots these systems direct cyclists to free parking spaces, which saves time and contributes to a better use of bicycle parking. These systems

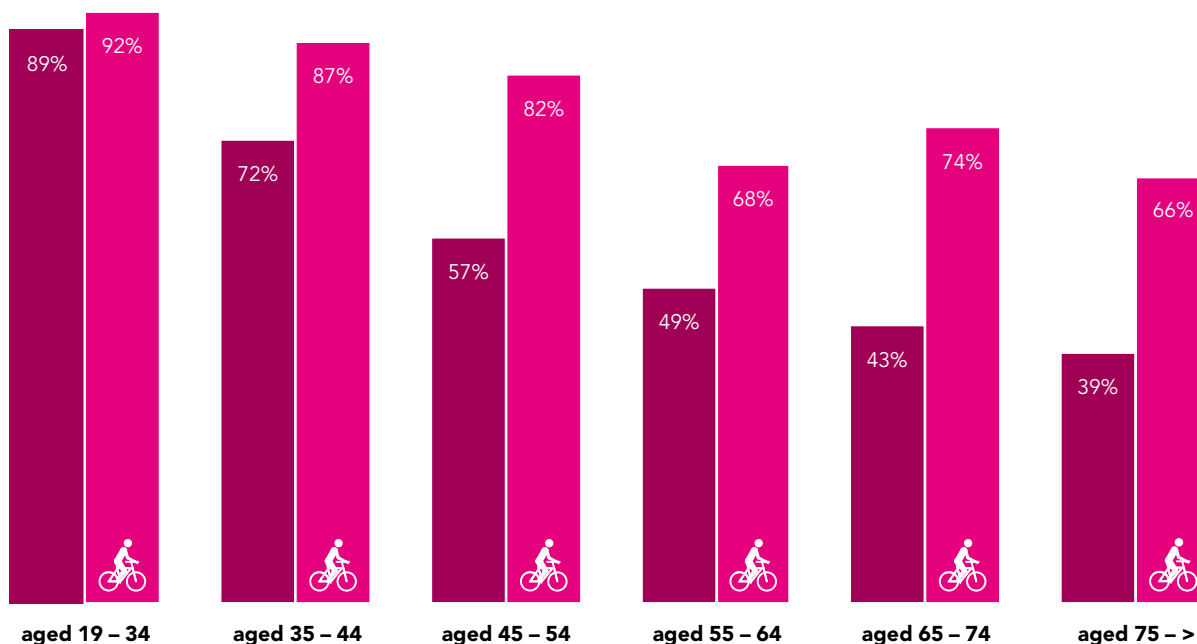
can pay themselves back within four years. Incidentally, the space used by parked and riding bicycles is very limited compared to cars.

Bicycle related economy

The cycling business also adds significant value to the city. Businesses involved in manufacturing, selling, repairing, letting or parking bicycles account for almost 900 jobs in Amsterdam, with an estimated total revenue of 100 million euros and 35 million euros of added value. But the economic value of cycling is not just limited to the cycling business, it also contributes to tourism, parcel services and meal deliveries. In 2017, even the ANWB, the main Dutch emergency roadside assistance company, got on their bikes, in a pilot to deliver emergency car repair services by bicycle.

Calculating the value of policies

Of course policy and political decision making is much more complex than a simple calculation. But these numbers and their economic underpinnings do provide relevant insights into the added value of cycling for individuals, organisations and the city.



12a-b At Eerste van der Helststraat in De Pijp district, bicycles would block pavements and shop entrances (a). The situation has been changed to create more space for people strolling along, shopping and enjoying themselves (b). Photos: Maaïke Nicolai-Geerling

13 At the Albert Cuyp street market, cyclists can park their bikes in the evenings when stall holders have left. Photo: Paul Rijnders



12a



12b



13

Dividing up the public space for the various modes of transport is proving more complex in practice than on paper. Some difficult decisions need to be made, such as choosing whether to scrap car parking spaces in favour of wider cycle lanes; whether to allow cars to use tram lanes and how this will affect journey times and operational revenues of the public transport system; and whether to reduce the maximum speed on some roads from 50 km/h to 30 km/h. On streets where we succeed in curbing car traffic, we can introduce measures which are very effective if there is limited car traffic, such as bicycle streets and 30 kilometre zones. Bicycle streets such as the Sarphatistraat are shared by cyclists and cars, but cyclists have priority and cars are considered 'guests'. These and other concrete measures are outlined in the next article of this issue of Plan Amsterdam.

Cycling 2.0

There are limits to how many extra bicycle parking spaces and how much extra space for cyclists the city can create. This is why Amsterdam is experimenting with new solutions for the future, including the development of bicycle sharing policies and strengthening the public transport and cycling chain. The busier traffic becomes, the more cyclists will have to look after each other and other road users. This is why the council has started focusing more on understanding the cycling experience among cyclists and trying to change certain aspects of their behaviour. In recent years cycling coaches and

improved signing have been introduced to encourage cyclists to park their bicycles in the appropriate areas. Launched as 'cycling 2.0', Amsterdam has started researching in more depth the cycling experience, the impact of busy traffic on stress levels among cyclists and the possibilities of promoting desirable cycling behaviour.

The next step

The *Meerjarenplan fietsen 2017-2022* marks the next step in Amsterdam's ambition to build a sustainable and accessible city. Substantial investments will help to provide excellent access to new housing developments, offer space for the growing cycling flows and accelerate the switch from the car to public transport. Whereas in the previous plan, the emphasis was on bicycle parking near train stations, the current plan focuses on building cycle routes in Amsterdam and the region. Maybe in 2022, when the next long-term bicycle plan is drafted, the shift from car use to cycling will have been so strong that a large part of Amsterdam's streets can be prioritised for cyclists and pedestrians. This would be another step in managing Amsterdam's future: the development of an accessible and liveable city, while at the same time leaving room for further growth. ■

'We should be more proud of our cycling culture'

by Maud de Vries
Photo: Roos Lomans

Katelijne Boerma

Lecturer at Amsterdam University of Applied Sciences and
Bicycle Mayor of Amsterdam



Katelijne Boerma has been Bicycle Mayor of the Amsterdam region since 2017 and will continue for at least another two years. What are her objectives and what does she hope to achieve?

"When I saw the role of Bicycle Mayor advertised, I immediately thought: This is me! I believe cycling is the answer to many important challenges that the city is facing, especially challenges related to a healthier lifestyle. As the Bicycle Mayor I have the opportunity to try and address these challenges. It's been a wonderful experience so far, also on an international level. The Amsterdam Bicycle Mayor Programme has grown substantially in the last year. I'm part of a Whatsapp group with Bicycle Mayors from Mexico City, the Indian

city of Baroda, Sydney, Rio de Janeiro, Beirut, Cape Town and many more. Other Bicycle Mayors consider Amsterdam to be bicycle heaven – and I agree. Of course there is always room for improvement, but I think we could be more proud of our cycling culture.

Because other cities look up to Amsterdam, I try to inspire them with good practice examples from Amsterdam, such as innovations in infrastructure, the fact that most Amsterdam people cycle instead of drive to work and the challenges we are facing to manage bicycle parking in the public space."

What can the other Bicycle Mayors do for Amsterdam?

"I learn a lot from the other Bicycle Mayors. For instance how Mexico City's Bicycle Mayor has in a short time surrounded herself with a group of 29 volunteers who help her to set up new projects to promote cycling in her city, in partnership with the C40 Cities network and the Paris mayor. I have also found that it can be helpful to look at Amsterdam's cycling issues from the perspective of the people in Brazil, Australia or India. Together we can develop new insights and solutions."

What is the most conspicuous cycling challenge in Amsterdam?

"No doubt the busy traffic is our greatest challenge. This can lead to unsafe situations, especially at dangerous junctions near schools. In the public space the car is still too dominant. Cycle lanes need to be widened and we need more streets where the car is a guest, also if this means axing a few car parking spaces. Also, the maximum speed needs to be lowered. The Long-term Bicycle Plan already includes proposals to create wider cycle lanes and safer junctions. It would be great if I could help to speed up these plans.

I have decided to focus on three objectives:

- 1 To promote the bicycle as a healthy, social and sustainable mode of transport. It's healthy because it will help you to achieve the standard 60 minutes of exercise a day without too much trouble. And sustainable: using your bike you travel without leaving a carbon footprint.
- 2 Be considerate to each other, also when riding your bike. Cyclists don't like mopeds or tourists, car drivers don't like cyclists. I think we need to have a good look at ourselves as cyclists and ask ourselves whether we really need to cross Dam Square at 25 km/h. We need to realise that there are many different users on the road and consider them all.
- 3 Improve safety for children, so that more Amsterdam children can cycle independently. I am a mother of three children myself, and I really stress out when they all go out cycling with me. If children start cycling at a young age, there is a much greater chance that they will continue to do so as adults. At the moment there are too many obstacles for parents to let their children cycle by themselves in Amsterdam."

1a-b If children learn to cycle from a young age (a), there is a big chance that they will continue to cycle when they grow up. At some point they will do their traffic exam at school (b).

Photos: Edwin van Eis

When will you be satisfied with what you have achieved?

"It's my mission to reach a wider audience than just the people who are already cycling. So I would like to reach the people who still often travel by car or moped. I'm working with BYCS (bicycle lab, previously CycleSpace, the NGO who initiated the office of Bicycle Mayor) to set up a graduate course with the mission to make 50% of all journeys in cities bicycle journeys. We are also developing an Amsterdam Impact Index for bicycles, for Bicycle Mayors in other cities to use. If I can achieve all these things, I would be very happy. And I'm looking forward to the Junior Bicycle Mayor elections in June. These are really great things to be involved with."



1a

1b



1 At Sarphatistraat the road has been turned into a cycle street, where the car is a 'guest' and cyclists can enjoy a fast, comfortable and safe cycling experience.

Photo: Marco Keyzer

2 With the tremendous success of cycle-friendly Sarphatistraat, the new design is replicated to other parts of the Inner Ring, the bicycle corridor around the city centre.

Impression: DCAP

1

Cycle-friendly design in the compact city

by Ruwan Aluvihare, Sjoerd Linders and Kees Vernooij r.aluvihare@amsterdam.nl / s.linders@amsterdam.nl / k.vernooij@amsterdam.nl

Cycling plays a key role in tackling Amsterdam's mobility issues. Yet, the dominant planning mindset is still based on motor traffic. Bicycle based urban design of new high density developments simply does not exist yet.

Major changes in thinking are, however, sporadically breaking through in Amsterdam. Bicycle garages are becoming a normality. Busy junctions experiencing huge amounts of cycling traffic have been improved with innovative designs which maximise cycle space and flow, including the introduction of priority for cyclists in traffic lights sequences. Amsterdam is also experimenting with shared roads for bicycles and motorised traffic where cyclists have priority and cars are 'guests'. The 'cycling mindset' is gaining weight. In this article, we will explore more in depth some of the measures and experiments which have been introduced, and the promising results they have produced.

New developments in bicycle parking

Excellent bicycle parking has become standard in the Netherlands. The first large underground garages in Amsterdam were built 15 years ago. They had a basic, functional design, but most of them proved a success. Since, expertise in building garages with excellent logistics design has become increasingly important. These days, garages are contracted out to the best architects. The new generation of cycle garages is comfortable, efficient and increasingly attractive.

New developments in bicycle parking are happening all over the Netherlands. Utrecht, Amsterdam and NS (Dutch Rail) have recently joined forces to standardise parking signage, helping cyclists to recognise parking facilities more easily. The first few of these signage projects are currently under construction. Whilst this is underway, Utrecht is also building the world's largest

cycle garage, with a capacity for 12,000 bicycles, at Utrecht Central Station. The garage's internal logistics will be regulated by digital systems indicating empty spaces on individual levels. These systems have already been tested in smaller garages and will be introduced as standard in all new garages in Amsterdam as well. In total, Amsterdam plans to deliver 24,000 spaces in the next few years, on top of the 16,000 that have already been built in recent years.

More space to cycle in cycle streets

The city is getting more crowded, and there is not enough space for cyclists and pedestrians. On top of this, 80,000 new homes will be built in the coming years, which will lead to an estimated ten percent increase in cycling traffic. In the city's 2015 Mobility Plan (*Uitvoeringsagenda Mobiliteit*) various measures have been outlined to provide more space for pedestrians and cyclists. One of these is to turn the so-called Inner Ring (Marnixstraat-Weteringschans-Sarphatistraat) into a cycle corridor. In June 2016 a pilot was started at Sarphatistraat to test whether the introduction of a cycle street will provide a more pleasant and safer cycle route. The route is not only fast and comfortable, but also caters for slower, more sociable cyclists to cycle alongside each other and have a chat (the route allows for three or four cyclists travelling side by side). The pilot is run on the stretch between Alexanderplein and Weesperplein. Cars are 'guests' in this cycle street and the maximum speed has been reduced to 30 km/h. Only trams are still allowed to travel faster, at a maximum of 50 km/h.

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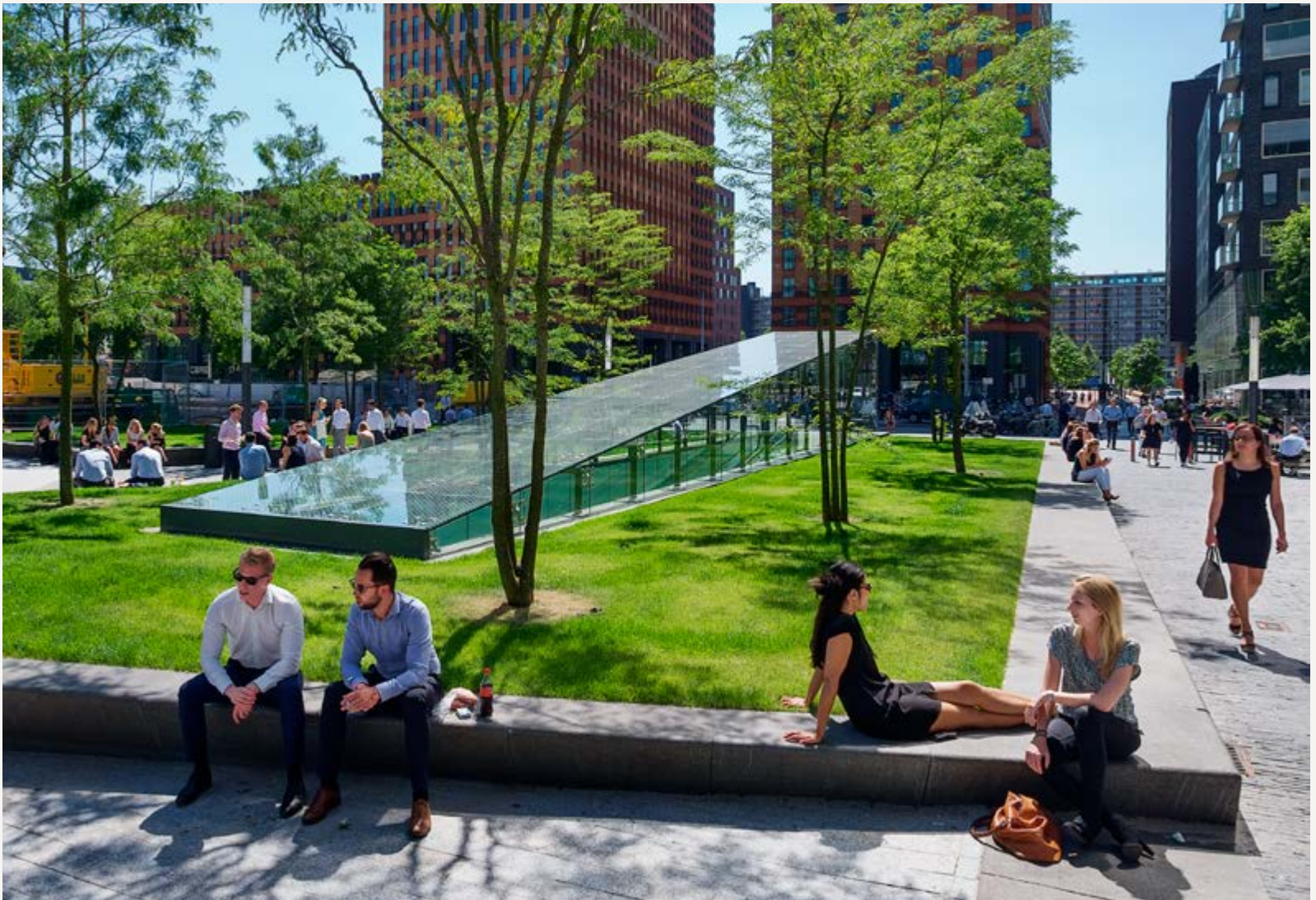


3a-g Amsterdam is building underground cycle garages at a fast rate. Examples include the brand new Mahlerplein at Zuidas (a-b) , Beursplein (c-d) and Leidseplein (e-g) – the latter two are both currently under construction. Together, these garages provide more than 7,000 spaces.

Impressions:
(a-b): Garage design: Movares, Paul van der Ree
(c-d): Garage design: VenhoevenCS
(e-g): Tender and final design: Zwarts & Jansma



3a



3b



3c



3d



3e

3f



3g





3-4 These days, cars are banned from the famous shopping street Ferdinand Bolstraat. Fifty years on, the dream of the 'safety on our streets' movement has come a long way.

Photo: Stadsarchief Amsterdam
Photo: Ruwan Aluvihare

5a-b In order to improve the capacity and flow at various junctions, cameras are used to assess cyclists' riding lines and possible conflicts. The illustration (a) shows the so-called desire lines of cyclists approaching the junction Amsteldijk and Vrijheidslaan at Berlagebrug (b) from the north.

Source: Copenhagenize Design Co.
Photo: Sjoerd Linders

The effects of the measures were determined by comparing a zero measurement before the pilot started and a measurement four months into the pilot. The researchers also interviewed cyclists, residents and drivers about how they experienced the pilot. Their conclusion was that the measures worked. The number of cyclists using Sarphatistraat increased by 23% in a short time, from 17,265 to 21,262 per day. The number of cars decreased by 2% in the busiest section (4,868 cars per 24 hours), and by 9% in the quieter part (2,382 cars per 24 hours). The average speed of cyclists went up slightly, while the average speed of cars has gone down and the speed of trams has remained the same. The survey also indicated that the new situation is not less safe for cyclists. The vast majority (88%) of the interviewed cyclists thinks the new design is an improvement compared to the old situation. Most of them consider the cycle street to be comfortable (94%) and most of them feel safe riding on it (82%). Most local residents and businesses are also positive. Most pedestrians indicate that they do not experience any difference compared to the old situation.

This means that the pilot has been a great success. On the basis of the results, a number of improvements will be introduced, including an extra pedestrian crossing and clearer road signs indicating that this is a cycle street. Where possible, other parts of the Inner Ring will also be improved with red tarmac and cycle friendly speed bumps. Work will start with the stretch between Weesperplein and Weteringcircuit.

Innovative reconstruction of busy cycle junctions

In 2014 Amsterdam council decided to launch the Cycling Boost project (in Dutch: Fietsimpuls), providing extra measures on top of the existing long-term plan to improve the capacity and flow at busy 50 km/h junctions experiencing a large amount of cycle traffic. Before setting the design team to work, the University of Amsterdam in partnership with Copenhagenize Design Company recorded and analysed the cycle traffic flows at these junctions (see Plan Amsterdam 4/2014: Cycling Policy and Design). The behaviour of cyclists at nine busy junctions was logged in detail, with cameras

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5a



5b

6a-b The existing traffic islands (a. no man's land) are made smaller (b), lowered or even removed.

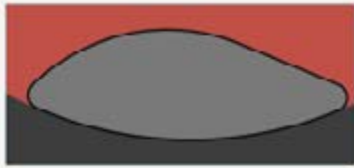
6c-d Existing narrow cycle crossings (c) are widened and provide more space for cyclists to merge. The road markings have been simplified (d).

6e-f If the pedestrian flow is small enough, an existing narrow cycle crossing along a wide pedestrian crossing (e) can be widened by narrowing the pedestrian crossing down to the legally required minimum and simplifying the road markings (f).

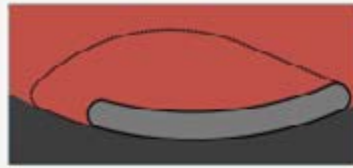
6g-h The standard bend of a cycle lane (g) can be widened for approaching cyclists and cyclists turning right to improve the cycle flow (h). Sometimes cyclists will cut across the pavement, so before choosing this solution, the protection of pedestrians needs to be duly considered.

6i-j A cycle crossing with straight line markings across the road axis (i) is widened and given a tapered line marking (j), resulting in an improved traffic flow.

6k-l Cross markings (do not stand here!) improve traffic flow when two cycle streams cross each other (k). Separate markings for left and right turns improve the flow if large groups of cyclists cross a junction at the same time (l).



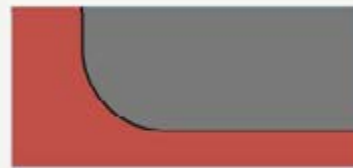
6a-b



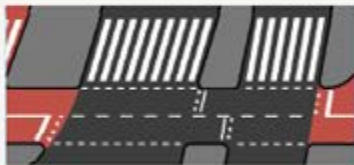
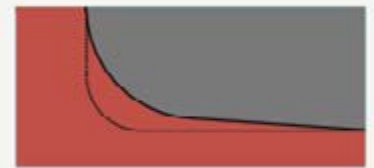
6c-d



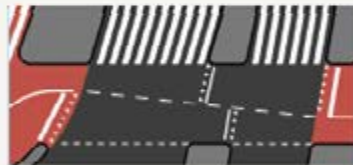
6e-f



6g-h



6i-j



6k-l



7a The old design (a) for the junction at Mr. Visserplein and Jodenbreestraat provided a maximum of 36 m² for waiting cyclists. The space for cycling at the junction was 52m².

7b The new design for the waiting space has been enlarged to 55m², accommodating 24 cyclists. The space for cycling has also been enlarged to 78m².

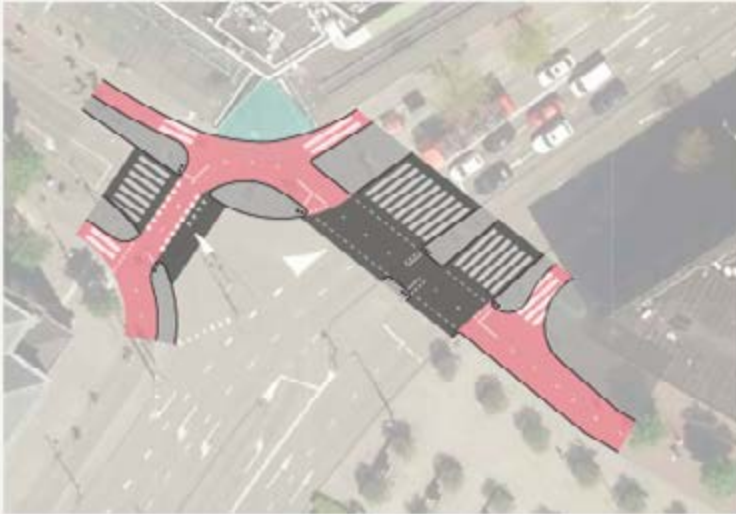
Illustrations: Dick Wetzels

8a-b These heat maps show that the first ten cyclists opt to stand near the curb of the traffic island. They can use the curb for support and from this position they also have a good view of the traffic lights. The first ten cyclists fit into both the old (8a) and the new (8b) design.

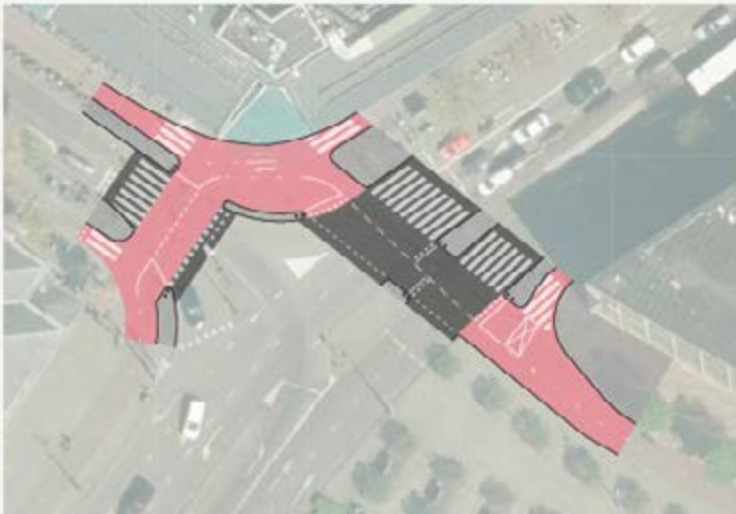
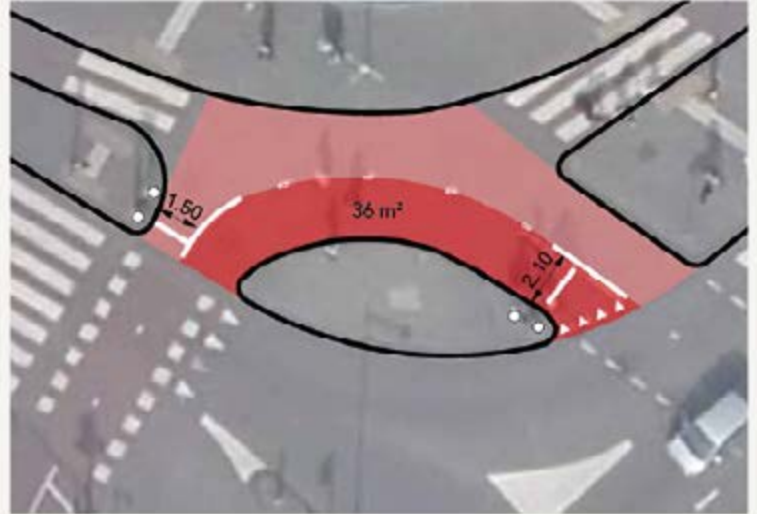
8c If another ten cyclists also need to find a space, most of them will join the queue at the back, but some will fill up empty spaces at the front or stand across the line or even on the road.

8d The new design anticipates this type of behaviour. Because of the narrow traffic island and the wide waiting box nearly all cyclists fit within the lines.

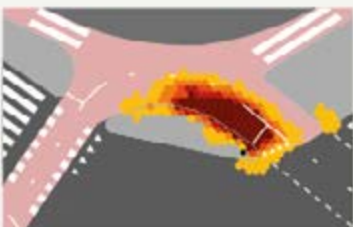
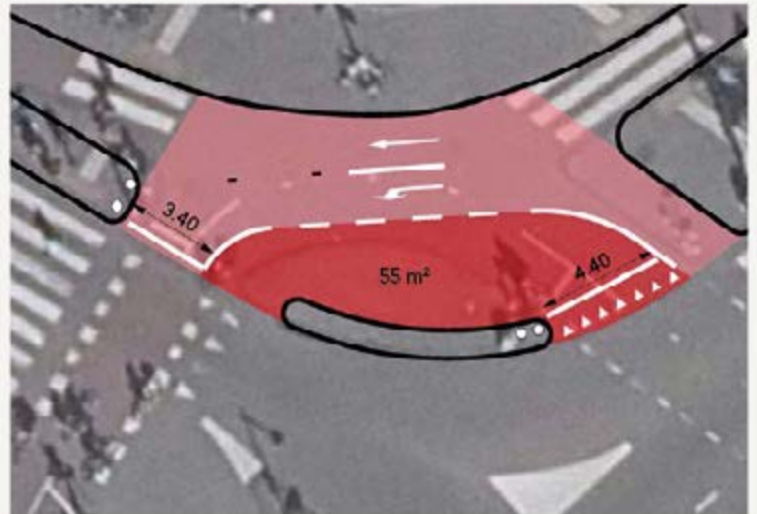
Maps: Bart de Vries



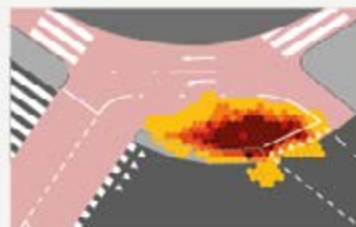
7a



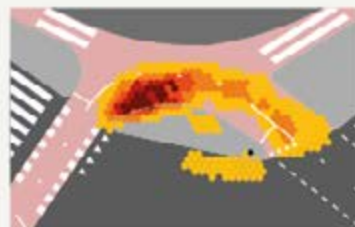
7b



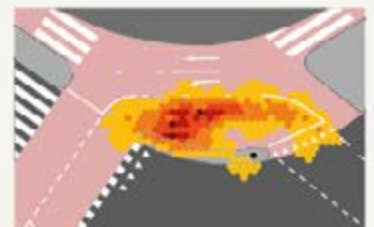
8a



8b



8c



8d

9a-b The junction at Mr. Visserplein and Jodenbreestraat, new situation (off-peak).
Photos: Martijn Sargentini

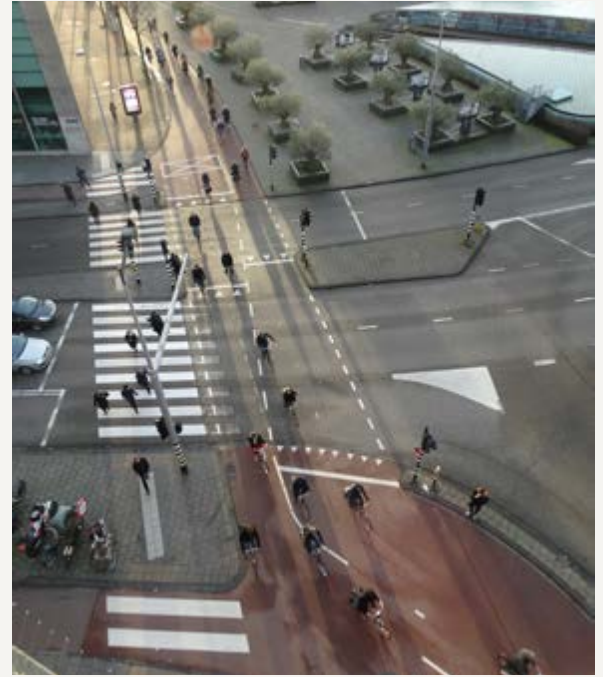
10 Mixed traffic at the Stadhouderskade and Hobbemastraat traffic lights in 1936. Before the Second World War, most Amsterdam streets had been paved, but they were still dominated by bicycles and freight bikes.
Source: Stadsarchief Amsterdam

11 Mixed traffic at Berlage Bridge, 1970's. The exponential rise of the car from the 1950's resulted in increased pressure on cyclists and an increase in the number of accidents.
Source: Steinmeier, Hans / Anefo, Nationaal Archief

12 On busy junctions, cars and slow traffic crossing each other is often regulated, but the interaction between cyclists among themselves is normally not regulated by traffic lights. This can cause issues with a lack of waiting space and cyclists not giving priority to fellow cyclists who have right of way.



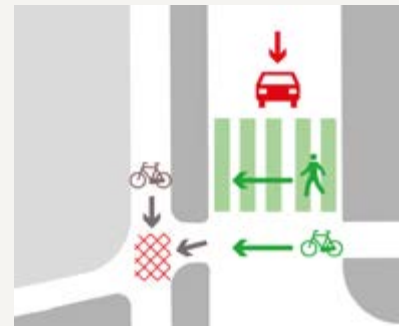
9a-b



10



11



12



13a-c



13a-c Increased traffic on separate cycle lanes leads to more problems with cyclists not giving way, especially at peak times. Cyclists often also have to give way to pedestrians, because of zebra crossings on cycle lanes. Very few cyclists actually comply with this rule.
Camera images: City of Amsterdam

recording their actual riding lines and actions. The results were translated into clear, insightful maps. Additional interviews gave more insight into the experiences and behaviour of the cyclists. It turned out that many cyclists experience high stress levels when crossing these busy junctions and that this is partly caused by the design of the junctions.

Based on the results, council and external experts have designed various solutions in a series of creative workshops. These experts included traffic and public space designers, project managers, work planners, members of the central traffic commission and the police. They concluded that the city needs to make some fundamental changes, but considering the (political) problems these would carry, they decided to first look at what is possible within the current framework. This is why the measures which were proposed had relatively short timeframes in terms of their design and implementation, but still had a substantial impact on the capacity and flow of cycle traffic. Measures which would be too complex and therefore delay a speedy process, were avoided. This is why none of the 50 km/h roads were changed into 30 km/h roads, and also why no tram masts or large overhanging traffic lights were moved (also because this is an expensive exercise).

This approach, using cameras and interviews, has resulted in measures which are truly innovative and radically different from the usual local and national standards. These solutions have been compiled in the *Cycle Friendly Junction Toolbox (Toolbox fietsvriendelijke kruisingen)* and the great thing about them is that they can be applied not just in Amsterdam, but anywhere. The junction of Mr. Visserplein and Jodenbreestraat is a good example to illustrate two of these solutions: the 'banana' and the 'cone' (see illustrations 6b and 6j on page 20).

The Banana

The Banana is a smallest possible size traffic island between road and cycle lane at junctions, providing extra space for cyclists to wait for the lights to turn green. Before, the space was designed to match cyclists' natural riding lines, but as cyclists often have to wait at traffic lights, it is important to provide enough

space for them, especially at peak times, to make sure they will not block each other or wait on the road.

The Cone

On both sides of a busy junction, cyclists can form a wide queue while waiting for the light to turn green. When they pick up speed, riders will merge at different speeds and the wide queue will narrow again. At two-way junctions with cyclists coming from both sides, the oncoming cyclists need to have space as well. The analysis led to the so-called 'cone' solution: a wider cycle crossing which tapers back to a normal width. The Cone (in Dutch: *frietzak*) allows for a better distribution of cyclists waiting at the junction and faster crossing at the junction, resulting in a natural, ordered cycle flow when they cross.

Cycling experience survey

The implementation of the measures was followed up by interviews to research cyclists' experiences at three of the junctions which had been changed. At all three junctions cyclists cited the increased space and wider waiting box at the junction as an important improvement. There were also suggestions to make improvements, especially in relation to the flow of the traffic lights. Many of the interviewees indicated that they would like more widened cycle lanes and junctions.

Giving way

In response to unsafe cycling on roads shared with cars, separate cycle lanes have become the norm on 50 km/h roads, giving cyclists back the space and safety they need. Because of the limited speeds and the possibility to anticipate each other's actions, the interaction of slow traffic on crossing cycle lanes is not regulated by traffic lights. This allows for an efficient traffic flow with shorter waiting times.

Until 2010 this approach did not cause any problems, but cycle traffic has since grown exponentially. Today, the separate cycle lanes offer too little space to absorb current cycle traffic volumes. At some traffic lights, there is sometimes too little space for cyclists waiting to cross, which causes them to block the flow of ongoing cyclists. It is also becoming more difficult for cyclists to give way to each other. During off-peak hours cyclists still manage to sort things out amongst themselves, but

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Eye contact, body language and a nod

The Netherlands is well-known for its coherent road network design. Since the 1970s, transport modes have been separated, encounters between them have been regulated (e.g. through traffic lights) and speeds have been reduced. These measures have had a significant effect on traffic safety and increase in cycling.¹

This design logic was largely a response to the rise of the car and ensuing road safety issues. Cars imposed a big safety impact on other road users, but also severely hindered communication by putting people inside a cocoon. Thomas Schelling argued that “the market [...] for right of way at an intersection will fail because drivers of competing cars and trucks have no way to communicate offers and agreements”.² The resulting design logic, though well established and with best intentions, clearly comes at a price, especially for those who do not travel within such a cocoon.

The human scale

Many Dutch city centres are no longer dominated by cars, but by pedestrians and cyclists. Their

impact on other road users is smaller while both can communicate with other road users through eye contact or body language such as a hand wave or a little nod of the head. Precise, instant decisions are taken on the basis of these negotiations. Because of this, individuals maintain momentum while at the same time the whole system functions. Separation and overregulation of interactions do not fit in well with these dynamics. Studies suggest that more individuals are inclined to break the (top down) rules under these conditions. Instead of policing them back in line, we could also often embrace their behaviour. This offers opportunities to restore the human scale in urban traffic designs.

From traffic space to public space

Introducing such a new approach will allow us to design streets as public spaces, instead of traffic spaces. Prioritising cyclists is now evident in many spatial designs. More space for interaction has been created at intersections. Car traffic on De Ruijterkade is now routed through a tunnel, leaving the road above to pedestrians and cyclists. Although less regulated spaces with more

interaction lead to slightly more stress and friction, the benefit is more social interaction (where some expected chaos). The redesigned Sarphatistraat is perhaps still mostly a traffic space, but there is now much more opportunity to negotiate with others. The upshot is a big increase in the number of cyclists who choose this route and high scores in terms of experienced comfort. At Alexanderplein, removing the traffic lights increased interaction between all users, without showing any negative impact on the functional performance of the intersection.

The power of self-organisation

The information exchange which happens as cyclists and pedestrians engage in their continuous ‘negotiations in motion’ might have benefits which reach well beyond improved traffic flows. Movement in public space is not only good for body and mind but also for social capital.³ It brings people into active contact with the ‘other’ and teaches them to give and take. These complex, continuous negotiations can be seen as a game, which is tolerant, forgiving and formative: studies show that removing external rules leads to more altruistic



'Are the Dutch at the centre of yet another traffic revolution?'

behaviour. Reflecting on the removal of traffic lights at Alexanderplein, the Amsterdam Alderperson for Transport Litjens noticed that "less regulation can lead to responsible and alert road users".⁴

Theory indicates that interaction in the public space has an effect on a variety of individual and social dimensions. This correlates with reported well-being, health and longevity. It is also positively linked to mutual trust and reduction of prejudice. People that have more social interactions, have a stronger sense of belonging and sense of place. They do for instance more volunteering work. This doesn't necessarily mean that social interactions are always pleasant. But even if they are unpleasant, interaction seems ultimately better for people and society as a whole than the solitude of a sealed cocoon. There is large-scale academic agreement that taking away the opportunity to interact in our daily lives is detrimental to our social fabric.

We are only beginning to understand the process of self-organisation among cyclists and pedestrians. This bottom-up choreography needs space to function optimally. Furthermore, a specific

level of sharing is needed. For example, high variations in speed are counterproductive to a balanced traffic flow, as is complete homogeneity. Similarly, evidence suggests that this concept of a perfect balance also applies to the level of homogeneity for dimensions such as assertiveness. The intrinsic rules of this game, comparable to a swarm of starlings at sundown, ensure a relatively safe environment for participants. But this game also excludes outsiders. A diverse and context-sensitive approach is essential: sharing space with pedestrians is fine in places where there is plenty of activity (De Ruijterkade), but not suited to routes with high levels of through traffic (Sarphatistraat).

In the end this debate boils down to the question what kind of society we think we are and, more important, want to be. Do we focus on people's vices or on their virtues? Do we believe that people are intrinsically selfish and badly behaved, and that we need to have a rigid set of rules to keep them in check? Or do we believe people are intrinsically social and well-meaning and should we keep adjusting our rules accordingly? In any

case, cities where traffic is dominated by cyclists (and pedestrians) appear to be at the forefront of applying new knowledge to create new solutions which will eventually deliver more liveable, social, and truly smart cities. Are the Dutch at the centre of yet another traffic revolution which may radically change traffic designs in cities? Aren't all our cities better off with more carless drivers instead of more driverless cars?

Notes

- 1 Schepers, P. et al (2016). The Dutch road to a high level of cycling safety. *Safety Science*, 92 (pp.264-273)
- 2 Schelling, T. C. (2006). *Micromotives and macrobehavior*. WW Norton & Company (pp.30)
- 3 Te Brömmelstroet, M., Nikolaeva, A., Glaser, M., Nicolaisen, M.S., Chan, C. (2017). Travelling together alone and alone together: mobility and potential exposure to diversity. *Applied Mobilities*, 2(1), 1-15
- 4 Glaser, M. (2017) <https://www.theguardian.com/environment/bike-blog/2017/sep/22/what-happens-if-you-turn-off-the-traffic-lights>

the larger and more diverse the groups of cyclists are, the more pressure there is to ignore the rules and keep on cycling, denying other cyclists their right of way. This can lead to irritations and sometimes collisions. The increase in cycle traffic has resulted in more complaints about the situation, not only in Amsterdam, but also in other cities with high cycling densities, such as Utrecht and Leiden.

Naturally, the council is looking for ways to solve this problem. Within the existing framework of separate cycle lanes, installing more traffic lights does not seem to be the solution. The solutions described above, such as the 'banana' and the 'cone', can optimise the flow in existing situations at junctions, but their scope is limited. If cycle traffic volumes increase even more, the next step will be a more radical one: to get cyclists back on the roads while giving them more space to self-regulate their interactions.

Traffic lights on or off?

In the past, traffic lights were installed to guarantee a safe traffic flow at junctions in response to the large-scale adoption of the car in our cities. Now, with the number of cars in the city centre decreasing, a new situation has emerged where traffic can regulate itself. It's already happening at Alexanderplein and Muntplein, where cyclists, pedestrians, trams and small volumes of cars ensure a safe and efficient flow amongst themselves, without relying on traffic lights.

Alexanderplein

At Alexanderplein in Amsterdam's Oost district, two main cycle routes and three tram lines cross. In the 1960's traffic lights were installed to regulate traffic at this junction. In recent years, car traffic decreased while the number of cyclists went up. Often a red light would be showing with hardly any cars crossing, so cyclists started to ignore the lights. In 2016, the lights were

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15 At Muntplein, the traffic circulation was changed. Car traffic has been reduced, which means traffic lights have become redundant. This has positively affected the traffic flow at this central junction.
Photo: Alphons Nieuwenhuis

16a-b Near Dageraads Bridge the main road has been narrowed to give cyclists and pedestrians more space.
Camera images: City of Amsterdam



15



16a-b

17a-f The junction at Meester Treublaan near Berlage Bridge. The camera stills show the waiting area for cyclists in the old situation (a, b, c) and the new situation (d, e, f) at 7.50, 8.15 and 8.45 in the morning. Creating more space for waiting cyclists has improved the traffic flow. Camera images: City of Amsterdam



17a-c



17d-f



turned off by way of experiment. Cameras were used to monitor the effects and any possible dangerous situations emerging. The conclusion was that the traffic flow for cyclists was improved and that safety levels were not markedly different from the situation with traffic lights. Turning off the traffic lights had not negatively affected the flow of busy tram traffic at the junction either. Cyclists who were interviewed reported that they felt the interaction between cyclists had improved. At the same time, they did still experience the junction as difficult and demanding. This is because the narrow cycle lanes and limited waiting areas are not geared up for a non-regulated junction. To address this issue, the traffic lights have been taken away and a proposal has been drafted for a new design to fit in with cyclists' needs. The experiment at Alexanderplein demonstrates that turning off traffic lights can help the traffic flow, but that there must also be a plan in place to build a new design once the traffic lights have been removed.

Muntplein

For decades the Muntplein was a notorious junction with a jumble of different traffic streams. Traffic lights were installed here as early as the 1950's in order to bring some order to the chaotic traffic of pedestrians, cars, cyclists and trams. Over the years, car traffic has been increasingly curbed at this junction. In 2016, the most significant intervention to date was introduced, banning all car traffic entering from the south. This had such a large impact on the traffic streams, that traffic lights were no longer appropriate to regulate traffic and were removed. The measures have resulted in a better traffic flow for pedestrians, public transport and cyclists.

Bicycle based urban planning

The 2010's have seen an increased awareness of the success of cycling among politicians, policy makers and designers. Rightfully so, because cycling has proved to be a key component in solving our mobility issues. In a

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18a-b A century ago freight bikes were used to carry all sorts of goods, as in these pictures taken at the corner of Prinsengracht and Leidsestraat (date unknown) and at Jonas Daniël Meijerplein (1930)
Photos: Stadsarchief Amsterdam (a) / Nico Swaager, Stadsarchief Amsterdam (b)

19a-d Because of the excellent modern cycling infrastructure, the current wave of 'special' bikes is bigger, stronger and faster than ever before.
Photos: Marco Keyzer (a, d), Edwin van Eis (b), Alphons Nieuwenhuis (c)



18a-b



19a-d



20a-b In the cycle-friendly town of Houten, a car journey taking 24 minutes can be achieved in 9 minutes by bicycle. Amsterdam will use these traffic circulation models for its cycle-friendly designs of future urban developments.
Source: Google Maps



20a-b

compact city, the bicycle offers the fastest, most flexible and cheapest means of getting from A to B. We have demonstrated that we can build large-scale bicycle garages and give cyclists extra space at traditional junctions. Yet, at the same time we know that the city is growing and cycling is still on the increase. Because of the excellent cycling infrastructure a variety of different types of bicycle is emerging, including larger (cargo) bikes and faster (electric) bikes. This trend will only further necessitate a clear design for cycling and cyclists' interaction with all the other modes of transport in the compact city.

State-of-the-art design

The number of people living and working in Amsterdam is set to increase considerably in the coming decades. The only way to accommodate these rising numbers in a sustainable way is to integrate cycling into the design of new developments. So now would be the ideal moment to introduce bicycle based urban planning. But what does bicycle based urban planning mean? To start with, access to all local facilities and transport hubs are prioritised for bicycles – it should not be made easy for cars to reach them. This kind of intervention delivers a particular type of street pattern. Ideally, a proper hierarchy in the bicycle network should be introduced from the outset, including fast, junction free

cycle lanes and bicycle flyovers to avoid complex, unsafe situations. Nijmegen, Eindhoven and Copenhagen have already introduced such flyovers.

In a bicycle based urban planning scheme, cars will take second place. Why not build underground garages for bicycles rather than cars, considering only half of Amsterdam households have a car? Why not provide shared cars as part of the purchase or rent of a new apartment? The morning bicycle rush hour is extremely busy in Amsterdam, so why not ban heavy vehicles and restrict available space for cars during weekdays between 8am and 9am? This would create more space and a safer environment for cyclists on their way to school or their jobs. In this way, vehicle networks would be dynamic; fine-meshed during rush hours and widely spread at other times, approaching mobility solutions from the logic of a swarm instead of a fixed flow. If all this is put into place, many streets in new urban developments could become pedestrians and cyclists only, while other streets, except the main road, could have one-way traffic. This would free up huge amounts of space to use for street activities and it would also make these neighbourhoods safer, cleaner and more liveable. These urban design ideas are evidently 'state of the art' but they still need to filter through and be brought into our mindsets. ■

Fietsers voorrang

Fietsers maken Amsterdam

Voor de toekomst van Amsterdam is het essentieel dat meer inwoners van de stad en de metropoolregio voor andere vervoerwijzen dan de auto kiezen. Het belang van de fiets zal daarom nog groter worden. Cijfers en economische onderbouwingen laten zien wat de fiets kan betekenen voor individuen, organisaties en de stad als geheel. Dat fietsen gezond is en goed voor het milieu weet iedereen wel. Maar ook de economie van de stad profiteert van meer fietsers. Paradoxaal genoeg komen de voordelen van fietsen deels bij de automobilist terecht: doordat mensen de fiets pakken, stroomt het autoverkeer beter door.

Om het fietsen in Amsterdam aantrekkelijk te houden is het nodig om de fietser meer ruimte te geven. Lag het accent in het *Meerjarenplan fiets 2012-2016* nog op fietsparkeren bij treinstations, in het nieuwe meerjarenplan (2017-2022) ligt het op aantrekkelijke fietsroutes in Amsterdam en de regio, aangevuld met hoogwaardige ov-verbindingen. De drukste en krapste fietspaden worden de komende jaren verbeterd. Ook zet de gemeente de inhaalslag op het gebied van fietsparkeren door, maar dan meer gericht op de binnenstad. In de afgelopen jaren zijn duizenden extra fietsparkeerplekken gebouwd, onder andere bij stations, en daar komen er de komende jaren nog duizenden bij. Om de bestaande fietsparkeercapaciteit beter te benutten is er de regel dat fietsen in een groot deel van de stad niet langer dan zes weken geparkeerd mogen staan.

Ondanks de effectiviteit van deze maatregelen zijn ze naar verwachting niet voldoende om de groei van het fietsgebruik duurzaam te faciliteren. Daarom wordt er ook geëxperimenteerd met mogelijkheden om méér fietsritten te faciliteren met minder fietsen, bijvoorbeeld door deelfietsbeleid te ontwikkelen. Daarnaast wil de gemeente meer kennis opdoen over fietsbeleving, de invloed van drukte op gevoelens van stress onder fietsers en de mogelijkheden om gewenst fietsgedrag te stimuleren. Met die kennis wordt het mogelijk

om gericht beleid te maken en te monitoren. Als het fietsgebruik de komende jaren verder toeneemt en het autogebruik flink vermindert, zou een groot deel van de Amsterdamse straten primair ontworpen kunnen worden voor fietsers en voetgangers.

'We mogen best wat trotser zijn op onze fietscultuur'

Katelijne Boerma is sinds 2017 Fietsburgemeester van de regio Amsterdam. Katelijne: "Ik geloof dat de fiets het antwoord is op een aantal grote uitdagingen in de stad, zeker als het gaat over bewegen. Mijn missie is om een breder publiek te bereiken dan de mensen die al met fietsen bezig zijn. Amsterdam heeft een voorbeeldfunctie voor andere steden, ik probeer die dan ook te inspireren met praktijkvoorbeelden uit de stad. Denk aan innovaties op het gebied van infrastructuur, het feit dat de meeste Amsterdammers de fiets en niet de auto pakken om naar hun werk te gaan of de uitdagingen die we in de openbare ruimte hebben om fietsen te parkeren. Ik heb ervoor gekozen om me op drie speerpunten te richten:

- 1 Het promoten van de fiets als fit, sociaal en duurzaam vervoermiddel.
- 2 Wees lief voor elkaar, ook op de fiets.
- 3 De veiligheid verbeteren voor kinderen, zodat meer Amsterdamse kinderen zelfstandig op de fiets door de stad kunnen.

Fietsvriendelijk ontwerpen in een verdichtende stad

Stedenbouwkundige ontwerpen zijn nog steeds grotendeels gebaseerd op de auto, niet op de fiets. Maar dit decennium is er bij politici, beleidsmakers en ontwerpers duidelijk meer aandacht voor het succes van de fiets en de noodzaak van een goede fietsinfrastructuur. Een aantal maatregelen en experimenten heeft al veelbelovende resultaten opgeleverd:

- Comfortabele en efficiënte fietsparkeergarages, waarin de fietser via digitale technologie naar een lege plek wordt gedirigeerd.
- Fietsstraten zoals de Sarphatistraat, die fietsers aangenamere en veiligere fiets-

routes bieden doordat de rijbaan het profiel van een fietsstraat heeft gekregen. Een proef toonde aan dat dit werkt: het aantal fietsers in de Sarphatistraat nam in korte tijd flink toe en het aantal auto's nam af.

- Fietsvriendelijke 50 km/u kruisingen, met meer opstelruimte voor fietsers bij het verkeerslicht en een betere verdeling van fietsers, zodat ze sneller kunnen oversteken.
- Kruisingen zonder verkeerslichten, zoals het Alexanderplein en Muntplein. Niet alleen de fietsers maar ook voetgangers, trams en een kleine hoeveelheid auto's blijken daar zonder verkeerslichten sneller, maar toch veilig, te kunnen doorstromen.

We beginnen te wennen aan nieuwe manieren van zelfregulering tussen fietsers en voetgangers. De interactie op ongereguleerde kruisingen zorgt ervoor dat mensen met elkaar in contact komen, het leert hen geven en nemen. Onderzoek wijst uit dat dit leidt tot meer altruïstisch gedrag. Staan we in Nederlandse steden aan de vooravond van een nieuwe verkeersrevolutie?

In Amsterdam is de tijd er in ieder geval rijp voor om de auto een stapje terug te laten doen en de stad fietsvriendelijk te ontwikkelen. Bijvoorbeeld door auto's en vrachtverkeer tijdens de spitsuren uit bepaalde gebieden te weren. Met snelle fietsverbindingen en meer ondergrondse fietsparkeergarages. Of door nieuwe woon-werkgebieden grotendeels auto-vrij te ontwerpen. Stuk voor stuk innovatieve oplossingen, die een enorme hoeveelheid ruimte kunnen vrijmaken, zodat de stad veiliger, schoner en leefbaarder wordt.

Meer informatie / more information:

www.amsterdam.nl/fiets

www.amsterdam.nl/planamsterdam (4/2014: *Cycling Policy and Design*)



Ruwan Aluvihare (1956)

- Senior chief designer at City of Amsterdam’s Planning and Sustainability department
- Studied Landscape architecture at Leeds Beckett University, United Kingdom
- Recent/current public space and infrastructure projects include Leidseplein, Amstelstation, Zuidas



Vera van den Bos (1977)

- Policy advisor at City of Amsterdam’s Mobility and Public Space department
- Studied Urban Sociology at the University of Amsterdam
- Recent projects include the Meerjarenplan fiets 2017-2022 and bicycle parking at the Noord/Zuidlijn metro stations
- Currently working on policies for regulated bicycle sharing concessions in Amsterdam



Ria Hilhorst (1954)

- Policy advisor at City of Amsterdam’s Mobility and Public Space department
- Studied Urban and Rural Sociology at Nijmegen University
- Recent/current projects include: Report on Parking Standards for Bicycles and Mopeds; implementing maximum parking durations for bicycles; Manual for Enforcement of Bicycle Parking; Network of regional cycle routes
- Publications: ‘Further development of cycle culture’ in *Cyclists & Cycling Around the World*; *Creating Liveable & Bikeable Cities* (Juan Carlos Dextre, Mike Hughes and Lotte Bech, 2013); ‘A supportive institutional coalition: Building synergies with relevant authorities’ (with Fokko Kuik) in *Enabling Cycling Cities. Ingredients for Success* (2013)



Thomas Koorn (1977)

- Senior policy advisor at City of Amsterdam’s Mobility and Public Space department
- Studied Social Geography at Utrecht University
- Recent/current projects include Meerjarenplan fiets 2017-2022, Bicycle Parking and Mobility studies (studying the effects of Amsterdam’s growth on the city’s mobility)
- Currently working on low car traffic designs for the city



Sjoerd Linders (1977)

- Traffic regulation designer, Planning and Sustainability department, City of Amsterdam
- Studied Civil Engineering at Twente University
- Recent/current projects include analysis and design of small cycling infrastructure measures
- Author of STOP, a book about 100 years of traffic regulation in Amsterdam (2012)



Kees Vernooij (1973)

- Traffic Designer at City of Amsterdam’s Planning and Sustainability department, specialising in cycling infrastructure
- Studied Town Planning at Utrecht University of Applied Sciences
- Recent/current projects include the cycle network, e.g. designing improvements for busy cycling intersections and cycle streets
- From 1996 until 2016, Kees worked as a part-time bike courier in Amsterdam and Rotterdam

Cityscape 02/18

All under one roof



Photo: Michiel Poodt

Future proof school

What do future proof educational facilities in a densifying city look like? Densification means more children and therefore more school buildings in a city where there is increasingly less space. According to the Amsterdam reference standards for social amenities, green space and play facilities, roughly 7 extra primary schools and 1.5 new secondary schools will need to be built for every 10,000 new homes. In the past year new principles have been outlined for the construction of school buildings in a densifying city.

The Integraal Kind Centrum Zeven Zeeën (Seven Seas Child Centre) is a good example of an Amsterdam school building reflecting a number of these principles. It's an energy neutral building providing space for a variety of different functions under one roof: child care facilities, a primary school, after school care and facilities for parents. The building has been designed for flexible use of its space. Part of the school playground is located on the roof of the building (multiple use of space). The children are also free to use the public space located adjacent to the school grounds.