# The Streets Belong to All of Us

# Why has traffic taken over our public space?





While we were looking for our next car, I began writing articles about electric vehicles. Then another problem in search of a solution appeared on

my radar — traffic jams.

Driving an electric car is all well and good, but you still don't want to come to a standstill. I'd had my fill of traffic jams in Moscow: staying alert while waiting gradually sapped my will to live. What a waste of precious time. Traffic jams are a major irritant to all drivers, and the delays they cause are a drain on the economy.

I discovered there are high-tech solutions from the United States targeting this problem too. Google, Uber, and Tesla are working hard to make selfdriving cars a reality. It won't be long before your car can coordinate a trip efficiently with other vehicles, allowing you to relax with a video or a book.

Hopeful though that sounded, it was still some way off. Wasn't there a simpler solution?

Of course there was. Hey, this was the Netherlands!

The solution was bicycles.

'Every day, about half a million cars get stuck in traffic during the morning rush hour. If ten per cent of those drivers cycled instead, traffic jams would be a thing of the past.' So said Saskia Kluit (director of the Dutch Cyclists' Union) and four *wethouders* (members of the local executive, elected by the local council) from major cities, in a message to the new Dutch government in May 2017.<sup>2</sup>

'Yes!' I thought. If people cycled to work just once a week, traffic jams would all but disappear. If many more people cycled, the climate crisis and our petrol addiction would be history, surely? We already had electric bikes, enabling riders to cover much longer distances without getting tired. The first speed pedelecs, which could do 45 km/h (nearly 30 mph), were on the roads.<sup>3</sup> We even had recumbent bikes that could hit 133 km/h (over 80 mph), a world record established by Dutch students.<sup>4</sup> That was over the motorway speed limit.

Just one thing: not all Dutch cities were yet linked by high-speed bicycle highways. Why was that? What was the problem?

I set out to write a series of pieces on 'cycling versus congestion' in the seven weeks I had left before my maternity leave for my second baby. I contacted the Dutch Cyclists' Union, sketched out my plan for my readers,

and arranged to interview Marco te Brömmelstroet, an urban planning expert at the University of Amsterdam.

And here's where the story really starts.

# Let's Just Get those Bike Highways Sorted

Marco te Brömmelstroet, alias 'the Cycling Professor'. A handy moniker for a man with a tricky surname — and an intriguing one, too. A title like 'Cycling Professor' guarantees you a place in newsrooms' address books, including mine.

On the way to the interview I study a newspaper article featuring him. It describes an intersection in Amsterdam with broken traffic lights, where cyclists happily make their way through the traffic without any need for technical guidance.<sup>5</sup> Watching them, Te Brömmelstroet comments that cyclists often move around like a flock of birds. 'It's precisely *because* traffic in Amsterdam is so risky that it's actually safe,' he says. 'Amsterdam cyclists are always on the lookout. You need to use all your senses in this city.'

Te Brömmelstroet thinks cyclists behave rather like starlings. Although they focus mainly on themselves, they're very much aware of those ahead of, behind, and alongside them. And that organised chaos creates everchanging patterns.

An apt comparison, I think, cyclists and starlings. I'm sure this Cycling Professor will have some nugget of wisdom to impart about bike highways too. We shake hands in a temporary building made entirely of glass next to Amsterdam's South Station, the office of a cycling organisation where he had a meeting before I arrived.

'I'm looking into what we need to be able to create a network of bike highways in this country,' I enthuse.

Te Brömmelstroet gazes at me in silence. Officially, the Cycling Professor is actually an associate professor. A year younger than me, he sports a brown T-shirt with a picture of a bicycle pump — a nice detail for my piece. I rush on. 'Can I call you Marco?' He nods. And then I put my most burning question to him: 'I read in an American study that more commuters cycle to work if the local authorities provide bike highways and employers put in showers. Would that work in this country too, do you think?'

Marco continues to look at me for a moment before responding with a counter-question.

'Why do you want showers at work?'

'What?' I say.

'Why do you think cyclists have to get to work as fast as possible?'

What an odd question. And doesn't he look grumpy? You'd think he didn't want to be interviewed.

'Well ... the whole point of bike highways is to get a move on, isn't it?' I reply. 'But that means cyclists are going to get all swe ... er ... damp.'

'And what makes you say "bike highways", not "cycle paths"?' Marco asks.

I don't get where he's coming from. We want to be able to cycle to work as fast as possible, don't we? So we need bike highways. What's in a name anyway?

'Surely everyone wants to get from A to B as fast as possible?' I say.

'On the motorway, maybe,' Marco says. 'But in a cul-de-sac or on a campsite, a walking pace is the norm. And for many cyclists, speed isn't the top priority.'

'It is for me!' I say. 'Sure about that?' Marco asks.

I gaze out through the large windows at the bicycles parked by the front door and the tall office buildings: we are in the country's financial heart.

What am I supposed to make of this? You're busy, you have to get somewhere, so surely all you want is to be able to keep pedalling at a decent speed? Marco had asked to meet me at this particular spot, hadn't he, to save time? So why won't he give me a straight answer?

I start again. 'Governments can encourage changes in behaviour through facilities like showers and bike highways. And reduce traffic jams.'

'That's true,' says Marco. 'But what exactly are you doing when you build a bike highway? Encouraging people to get from one place to another as fast as possible. Maybe efficiency isn't the only reason people cycle to work. I'm involved in some research which shows that cyclists make detours and add on distance if that makes their route more pleasant. Don't you ever do that?'

I nod. Yes, OK, that's something I do every now and then. On the way back, if I'm not in a hurry. Once in a blue moon.

'And relaxed cycling seems to encourage creativity,' Marco continues. He cites behavioural biologist Frans de Waal, who came up with a theory about reconciliation between chimpanzees while out on his bike. 'And the graphic artist M.C. Escher, and Ben Feringa — the Nobel Prize–winning chemist — had some of their best ideas while they were cycling.' Dutch writer Jelle Brandt Corstius, too, says he writes on his bike.

I nod again. Now I catch his drift: getting from A to B isn't the only reason people cycle. Cycling is of value in itself. In an attempt to relieve the tension between us, I follow his line of thought and tell him about a holiday years ago when I set off from Rotterdam and cycled for weeks at the whim of the wind, ending up in Bremen. 'But that was a holiday,' I say.

Then I feel slightly bothered. Yes, I too enjoy cycling for its own sake. But I'm here as a journalist, to solve the traffic jam problem, and I have yet to write my story. The one about bike highways and showers. 'If more people could cycle to work,' I begin again, 'wouldn't that help us solve the problem of traffic jams?'

'Tell me, why do you think traffic jams are such a big problem?' Marco asks.

'Well, it's a pain getting stuck in traffic, isn't it? And on top of that, traffic jams cost us billions, don't they?'

'Do they?' he replies. 'How?'

'There are lots of people who don't get to work on time, and that reduces the number of hours they're productive for.' 'But how serious is that?' Marco asks with a twinkle in his blue eyes. 'Why does it matter so much if people arrive home or get to work a few minutes later because of a traffic jam? Don't you have to queue up at the supermarket from time to time?'

Again, I nod.

And then doubts assail me. How big a problem is it really, having to wait in a car, getting home later than you intended, compared with other problems?

Compared with mass extinction? Inadequate healthcare? Inequality?

War?

Why should traffic congestion merit seven weeks of investigative journalism?

On the train on the way home, my thoughts go off in all directions. I'm no techie — I studied Russian literature. But as a journalist I am used to searching for solutions to problems. And how can you solve a problem without ingenious technical fixes thought up by clever engineers?

I had thought that urban and regional planning was a technical discipline — which it is in most universities and institutes. But at the University of Amsterdam, in the Cycling Professor's department, it falls under the social sciences. That's why my conversation with Marco wasn't about the kind of bike highways you could speed along on a recumbent bike, e-bike, or speed pedelec, but about what people experience as they move about.

The first thing I do when I arrive home is take a shower. Then I run through readers' comments on my previous pieces on 'cycling versus congestion'. An older reader writes: 'Give me plenty of traffic jams. Nice and quiet for cyclists. I don't cycle because of road congestion. I know my own mind, thank you very much. I ride a bike because I want to, and because I've come to enjoy it, and because there are plenty of advantages to cycling.' This was a man who had cycled to and from work for 20 years, 52 kilometres (over 32 miles) a day. Yet he'd never done so for the express purpose of avoiding traffic hold-ups.

And there were other cyclists who were unconcerned about arriving at their destination as fast as possible. 'The provincial road is the most direct route, but I never go that way,' one had written. These people weren't in the least interested in solving the congestion problem. Another had commented: 'People going from A to B just need to stop believing they're in such a hurry.'

Once upon a time I would have labelled these people as curmudgeonly. But after my conversation with Marco, I hesitate. I keep thinking about the holiday I spent cycling with the wind behind me. Along with the journey through the Caucasus in our dark blue Niva, that had been the most carefree and adventurous trip of my life.

Could I afford to ignore that experience?

# The Start of a New Journey

In the end, I simply type up my discussion with Marco. The result is a piece in which he argues that cyclists are liable to become motorists on two wheels the moment you start labelling cycle paths 'bike highways'. A piece in which he has nothing to say about showers at work, but talks instead about Frans de Waal's chimpanzees.

The story turns out to be the most-shared article in the 'cycling versus congestion' series.<sup>6</sup> It speaks to people.

In the weeks that follow, I let other cycling experts have their say and discover just how little I know about cycling, even though I do it nearly every day. The conversation with Marco lingers in my mind. I email him: 'I was so taken up with the future of mobility, but I know so little about how it works. I really want to pursue the subject.'

'Want to talk about it?' he writes back.

I do.

But first our second son is born, and for the next four months life slows down.

Then Marco and I arrange to meet again, this time in the canteen of Amsterdam University's Roeterseiland campus, where Urban and Regional Planning, the department where he works, is based.

'One of the things I want to understand', I say, 'is why I thought traffic jams were so important in the first place.'

Marco's response is enthusiastic. 'I wonder,' he says, 'how it affects us — the fact that we think it's so important. And the fact that we're always on the go. Why do we want things to be that way? And is that really what we want? Are there any alternatives, and what could change if we find the answers to these questions?'

Not long after our conversation, he sends me a private message on Twitter:

**Cycling Professor** @fietsprofessor We're going to evaluate a new cycle path design at a crossroads in Amsterdam, together with some local civil servants. Want to come along?

> Thalia Verkade @tverka Yes please!

I'm expecting it to be rather dull. But this evaluation will radically change the way I look at our streets and roads.

### Meet the 'Chip Cone'

At the intersection that takes you from Amsterdam's Jodenbreestraat towards the Meester Visserplein square, the cycle lane widens just before the traffic lights. Suppose you arrive when the lights are on red. There are already three cyclists next to each other at the line — there's just enough space for you to squeeze in alongside them because the lane is unexpectedly broad at this point. The cycle path on your left, for the cyclists who are about to cross from the other side of the road, is correspondingly narrow. They can ride two abreast at most, as in a normal cycle lane.

When the light turns green, cyclists from both sides cross the main road. The cycle lane you're in tapers, while the one to your left widens. The cyclists you were next to at the traffic lights a moment ago cross at different speeds, forming a long tail. Once you're on the other side, you can ride two abreast along the cycle path as usual.

Although the intersection looks quite odd with all the oblique lines running across it, most cyclists will cross unhesitatingly. This experiment has been nicknamed the 'chip cone'.

# Cyclists' Crossing Point: The 'Chip Cone'

To improve the flow of cycle traffic where cycle paths cross roads, a team of traffic engineers, spatial planners, and social scientists came up with the idea of the 'chip cone'. The painted line dividing one cycle path from the other runs diagonally across the road.

#### **Red light**

While cyclists wait at a red light, they have more room to stand next to each other

#### **Green light**

As soon as the light turns green, the cyclists cycle at different speeds towards a narrower passing point





Source: Amsterdam municipal authority.

The chip cone is the subject of the evaluation I attend with Marco, who was involved in its design. He gives me some context: 'Eric Wiebes, the member of the local executive responsible for mobility issues, commissioned some research into possible ways to avoid bike tailbacks, but the condition was that any solutions had to let motor traffic flow unimpeded. The chip cone lets more cyclists wait at the red light than before. And that means more of them can cross at the same time once the light goes green.'

The evaluation is in an industrially styled municipal building that serves as a meeting point and flexible working space. Everyone seems to know everyone else, and people are in celebratory mood; the chip cone has won an annual award for innovation in cycling. We're all given a gingham-checked chip cone containing a banana-shaped sweet. The sweet is in honour of a new kind of miniature traffic island dubbed 'the banana' at the same crossing, which frees up the extra space needed for the chip cone.

In a PowerPoint presentation, two of the local civil servants who helped design the chip cone, Kees Vernooij and Sjoerd Linders, show how exactly they went about the task. That's handy, I think, an introductory course in crossing-point design.

First, some sociology students hung up a camera. Their photos of the square showed how cyclists in heavy traffic did all sorts of things you're not meant to do, like lining up next to each other at the red light, often on the wrong side of the central dividing line, and cycling the wrong way round the traffic island. The students also interviewed cyclists, many of whom said they found the heavy traffic and other cyclists' anarchic behaviour stressful.

The planners theorised that traffic might be more fluid if you let cyclists do their own thing, and so the workers responsible for painting traffic markings were told to position them to reflect how cyclists behave in real life. That's how the chip cone came about. The lines on the main road used by motorists continue to run parallel.

I look around the room, taken aback that so much thought has gone into designing a crossing point, and even more so that the outcome is being

evaluated in such detail. Though I'd somehow expected the solution to be more technical.

'So that's how they design crossing points?' I whisper to Marco. He grins.

'No way! The normal way to design a cycle path is to follow the guidelines in traffic engineering manuals. Which aren't about people's real behaviour.'

'Eh? What are they about then?'

'Rules,' Marco replies.

I don't understand his point. But I will soon.

Then, a third-year student in mobility steps onto the podium. Koen Schreurs has been given the task of counting all the potentially dangerous situations in the immediate vicinity of the updated crossing point. To do this, he has applied a conflict-observation technique used in traffic planning, known as DOCTOR.

Apparently everyone in the room is familiar with the term. Googling it later, I discover that it stands for 'Dutch Objective Conflict Technique of Operation and Research' and that it's a method used to assess road design. The DOCTOR manual contains sentences like this:

The time-to-collision concept is based on the existence of a trajectory that will result in a collision. Where road users miss each other while moving at high speed and without any significant adjustment in speed or trajectory, there is, strictly speaking, no such trajectory. Nonetheless, the risk of a collision in such situations remains a reality; a minor disturbance in the process could easily have resulted in a collision.<sup>7</sup>

For DOCTOR, then, people in motion are a type of projectile.

Using this method, Schreurs has researched the behaviour of cyclists as they approach the chip cone and use it to cross. He has measured and recorded the risk of collisions and concluded that the new design leads to some pretty dangerous situations. 'This isn't the safest way to do it,' he says.

Schreurs gives some examples of the conflicts he's observed. DOCTOR's definition of a 'conflict' is a situation in which someone takes longer than is strictly necessary to do something, in order to avoid a potential collision. For

example, a pedestrian on her way to the zebra crossing has to pause to let a cluster of ten or so cyclists past, all of them pedalling full tilt after crossing the road. The pedestrian loops around behind the cyclists to cross on the zebra crossing.

I hear muttering in the room. A number of attendees bombard the student with tough questions. They see something different — people cooperating with each other to make the best of the situation. Why does Schreurs view every possible interaction as a conflict to be avoided?

The student defends himself politely. He points out that he did take account of the cyclists' behaviour and the communication among them by tweaking the DOCTOR model, which was designed for drivers. And the local authorities have received some complaints about the updated crossing point from cyclists too.

'That was a hard task,' says civil servant Sjoerd Linders later. 'Cyclists in the area just before the crossing are expected to reach agreement among themselves. Schreurs's collision analysis helped the local authorities gain a better understanding of where cyclists find this difficult.'

The DOCTOR collision analysis is my first direct experience of traffic engineering. I've heard of it as a profession, of course, but up to now I thought traffic engineers were mainly concerned with designing the layout of new-build areas.

Neither have I really thought, before now, about the fact that their work is based on a specific set of logical principles, manuals, and design philosophies. I'm getting my first glimpse of this today. Collision course. Time to collision. DOCTOR. It sounds like an exact science.

The social scientists in the room have a different way of looking at the city; they see not a collection of buildings and roads, but a group of people. The urban and regional planners at the University of Amsterdam, as I gradually discover, study the interactions between human beings and the environment designed for them. A collision between two people walking along a pavement can be serendipitous: that's how William (Hugh Grant) meets Anna (Julia Roberts) in the film *Notting Hill*.

But in traffic engineering, a collision is a 'conflict' that has to be prevented. From the traffic engineer's perspective, the city isn't the sum of all the people who live and interact there, it's a set of roads via which people cross one another's routes and have to be prevented from holding each other up more than necessary.

While I'm chewing my banana sweet, it dawns on me that the chip cone is The Great Exception to the Rule: an extremely rare intersection whose design is based on the logic not of traffic engineers, but of sociologists. The chip cone is the crack in the system that reveals the system's existence.

# The City as a Geometry Problem

The name 'chip cone' was a Rotterdammer's brainchild, I later discover. My city has a knack for inventing nicknames. Rotterdam is home to the new 'Kapsalon' train station (named after a hearty snack that comes in a tinfoil tray rather like the station's roof), 'Shopditch' (aka the Beurstraverse, the Netherlands' first open-air shopping centre), 'Punter's Pier' (a footbridge to what used to be the red light district), and the 'Buttplug Gnome' (a sculpture by Paul McCarthy that depicts Father Christmas holding something that might possibly be a small Christmas tree).

And now, pedalling over 'the Swan' (aka the Erasmus Bridge), I'm developing an eye for the traffic-engineering system.

There's a message in official lettering on the asphalt cycle path over the bridge that wasn't there a short time ago: 'Say BOO to cyclists riding on the wrong side.' I must admit I sometimes ride on the wrong side of the bridge; you have to wait quite a while at the lights before you can cross the road and the tram line to get to the side where you need to be. And once you've crossed the bridge over the Nieuwe Maas river, if you have to be on the left side again, you've got to wait at the lights a second time. I'm riding in the correct direction today. The person speeding towards me isn't. There's a conflict ahead: not a cyclist, but a man on a moped. He's approaching pretty fast. I move as far over to the right as I can. Should I be yelling 'BOO' now?

After the chip-cone evaluation, I wonder why there isn't a two-way cycle path on both sides of the bridge. Not only would that be easier for cyclists, it would also keep the traffic flowing more smoothly. Of course, this *is* a bridge, I think. Maybe the problem is the lack of space?

In the weeks that follow I begin to develop a new awareness of the lines painted on the asphalt, of the way streets are divided into the sections and lanes that keep people in separate channels as they race past each other. Yet human beings, with their unpredictable behaviour, often seem to cause problems within the system.

I consider my own neighbourhood, in north Rotterdam. There is a street called Zaagmolenstraat that, though not very wide, has two sets of tram rails, flows of motor traffic in both directions, and cars parked along both kerbs. Everything seems to be designed to encourage people not to spend any time there, but to arrive, drive through, and leave as fast as possible. If you need to get out of a tram with a baby buggy, you'll often find a car blocking your way, as the parking spaces are the tram stop. So you've got to pelt along the tram with your buggy to the next door, yelling 'Wait!' to the driver in their glass cabin.

The street is at least as stressful for motorists. Its layout encourages you — begs you, almost — to drive through at speed. You're allowed to do 50 km/h (just over 30 mph), and there are no sleeping policemen (speed bumps). But with all those trams, and with cyclists making odd manoeuvres to avoid getting their wheels wedged in the tram rails, and with people getting off and nipping across the street between the parked cars, you can't really drive at any speed. Yet it feels as if that's what you should be doing.

On a bike, it's a complete nightmare — so narrow, so busy, and with tram rails to look out for. I dare not cycle through Zaagmolenstraat with my older son, who's just learned how to ride.

But we do always cycle to school together along a broad, segregated cycle path running between a two-lane road with a 50 km/h speed limit and the A20 motorway. To reach my son's school we have to cross the two-lane road. I'm beginning to find this astounding too. There's no zebra crossing.

No traffic lights either. There's just a narrow crossing point for cyclists, who must wait at the give-way markings for the cars to clear.

There are two more schools just behind my son's. Everyone coming by bike has to cross the road at least twice a day. Every morning, clusters of parents and children wait for a gap in the traffic. It is downright dangerous.

My four-year-old hasn't grasped the system yet. 'But we can cross here too, can't we?' he says, pedalling his little blue bike towards the left half of the cycle path, which has no give-way markings. Alarmed, I catch him up and plant my front wheel across his path. 'Stop — you can't cross over just like that!'

But why do children have to wait for a gap in the traffic rushing past? Why do drivers have priority right next to a school? Why isn't there a zebra crossing here, or at least a set of lights for the dozens of children crossing the road?

Now I'm astounded that these questions have never occurred to me before.

# Traffic Lights, Give-way Markings, and Push Buttons

Traffic is such an integral part of my everyday life that I've never stopped to wonder exactly how it works. Who decides if a zebra crossing or a set of traffic lights is to be placed at a particular spot? On the face of it, this strikes me as a technical issue, a question for traffic engineers.

But once I've got to know some traffic engineers, I grasp that it isn't just a technical matter. It's a social, political, and moral issue: a question of who has most rights. That dawns on me when Luc Prinsen, a traffic management advisor at the engineering company Goudappel Coffeng, and Mark Clijsen, a specialist in traffic control from the local authority in Tilburg, take me on a tour of some of the city's traffic lights.

I beg your pardon, that should be 'TCSs', or 'traffic control systems', as Prinsen, a tall man with salt-and-pepper hair and light blue eyes, calls them. Working together with the slightly shorter, bespectacled Clijsen, he has installed quite a number of them in Tilburg. Tilburg has about 150 TCSs: 150 intersections regulated by a computer and a set of lights, which these experts refer to not as 'red, amber, and green', but as 'red, yellow, and green'.

The first TCS on our tour, a small set of pedestrian lights, immediately raises some questions. When we press the button, the light obligingly turns green. But it goes back to red before we reach the traffic island in the middle of the road — even though the road we're crossing isn't at all wide.

That went pretty fast. Prinsen asks why that is. Straightening his glasses, Clijsen says, 'Maybe we dawdled a bit.' That's true, we strolled across, chatting. Now we have to wait for the next green light, with drivers passing us on either side.

'Are you allowed to adjust the lights?' I ask Clijsen. 'Can you set them to stay on green for longer, so people can cross at a more relaxed pace?'

'Yes, I can. That's what we do near housing for the elderly, for instance — or if someone makes a complaint.'

Wow, I think. So it really is that simple?

Prinsen adds, 'But to do that, he's got to check the logs for this set of lights to see how often that sort of thing happens. If you extend the green phase when it's actually quite rare for people to get stuck in the middle of the road, you undermine the credibility of the lights as far as all other road users are concerned. And that means drivers are less likely to take them seriously, which has a negative knock-on effect on traffic safety.'

We walk on towards a major intersection.

'Do you have to register the change officially if you adjust the lights?' I ask. 'Are there particular standards or rules you have to abide by?'

'I can make minor adjustments if I want to,' says Clijsen.

'So how often do you do that?'

'Oh, about once a week on average.'

Prinsen and Clijsen point out all kinds of features I've never noticed before. It's only once they acquire a name that I start to register them — just as with the 'chip cone' and the 'banana'. We look at virtually unnoticeable slits cut in the asphalt before the stop line on cycle paths and roads. Underneath these are vehicle detection loops that use a magnetic field to sense the vehicles above. This information is relayed to the traffic lights: someone wants the lights to turn green.

Now we're standing next to a black box on the verge alongside a major intersection. Pulling out a screwdriver, Clijsen opens a door in it. We see a computer screen surrounded by buttons, with a switchbox underneath. This is the brain of the traffic control system.

A schematic diagram of the intersection flickers on the screen. Just ahead of me, I see a motorist come to a standstill on the detection loop. On the computer screen, the patch he occupies turns black.

'Look, now the computer knows there's someone at the lights,' says Prinsen. 'And now the counting starts. There's 3,600 seconds in an hour. The amount of time vehicles take to vacate the intersection after the lights turn red totals about 600 seconds — 10 minutes — in every hour, and you have to add a safety margin on top of that. The rest of the available time has to be divided up fairly among the various streams of traffic, heading in different directions.'

But how do you do that? What does 'fairly' mean? And who does it apply to?

We've arrived at the 'Cityring', a happy hunting ground for anyone on a traffic light safari: it boasts a wealth of different species, all at close range. The Cityring is a one-way asphalt ring road, divided into two lanes, that runs around the city centre. Central Tilburg is encircled not by flowing water, like many historic Dutch cities, but by flowing traffic.

Completed in 2011, the Cityring is actually a series of linked-up residential streets, with pavements, like the one we're walking along at the moment; with houses, and the people who live in them; and with side streets where still more people live, work, and go to school. The only thing that marks it out as a ring road is its surface, designed for brisk traffic.

We stop at a small set of pedestrian lights that look a little out of place.

'The local authority would have preferred not to have these, but the school in this side street insisted,' says Clijsen. 'What you really need here is

a zebra crossing, so pedestrians always have right of way. But that's not feasible, it would mean congestion in other parts of town.'

'We already have to turn the taps on and off,' says Prinsen. 'When it's clogged up here or it looks likely to get congested, less traffic is let in at other points.'

Water pipes as a metaphor for streets, water as a metaphor for traffic. Traffic engineers can see how much traffic can flow through the Cityring by consulting traffic models. These are flow diagrams that include all the streets in the city, with thousands of variables, such as the time it takes for the traffic lights to change, the speed limit, the expected number of cars, whether there is a bus route that needs greater priority, and so on. This makes it possible to forecast the various routes traffic will take as it flows through the streets.

Clijsen says, 'A traffic light really is a last resort, not just something to be installed any old where. That's why we turned down the application for this little TCS to begin with, but they kept on petitioning, right up to the level of the local representative responsible for traffic.'

It was a real battle, I later discover. Headteacher Bas Evers refused to accept the fact that his 450 pupils couldn't cross the road independently.

'We can't have a situation where parents have to carry on bringing their children to school right up to their last year in primary because they're worried something might happen at a dangerous crossing point,' Evers told the local radio station. 'Each time I go to school, I find myself hoping that nothing's happened — just like my colleagues and our children's parents.' He was losing sleep.<sup>8</sup>

Initially, the local authority announced it had no plans to install pedestrian lights. As Clijsen has already remarked, that would 'take the speed out of the Cityring'. So the headteacher and his pupils' parents decided to organise an attention-grabbing stunt. It was almost 5 December, St Nicholas's Day, so they prevailed on the jolly old Saint — a local man dressed in a white robe with a red cloak — to climb up onto a construction platform. If the local authority wasn't prepared to guarantee the safety of the

school's children — of whom there were now 530 — then St Nicholas himself would just have to do the job.

'I invited all the political parties to come so we could show them the situation. I was ready to walk over to City Hall with the children,' Evers later told me by phone. 'I asked: "Don't you realise there's a school here? Why are children's interests such a low priority?"'

The message slowly got through: it wasn't fair that children couldn't cross the road safely.

In Tilburg, I press the button to operate the pedestrian lights that Bas Evers fought for. I count on my fingers. The traffic continues for a good 30 seconds. Then the cars stop, and a few seconds later the pedestrian lights turn green.

The lights flash.

Time to clear the pedestrian crossing.

There's a narrow margin.

Then the tap's turned on again.

Further on, the Cityring causes major problems, the problems that keep Bas Evers up at night. There's a reason locals call the inner ring road 'the racetrack'. At least a hundred accidents have been reported over nine months<sup>9</sup> — one every three days. Does it even make sense to use the word 'accident' for such a systematic occurrence, I wonder? The official speed limit is 50 km/h (31 mph), but the ring road is so like a motorway that it's very hard for drivers to resist putting their foot down.

Prinsen, Clijsen, and I are now beside a thick black-and-white-striped traffic pole that arches over the road. This 'portal' is a particularly exotic traffic control device. It bears a speed camera and a matrix board with a smiley that can frown as well as smile.

'We call the angry smiley a frownie,' says Clijsen. He designed the light himself as a way to call out speedsters. 'Drive at a normal speed and you'll see the smiley,' he explains. 'The frownie appears if you're doing over 50 km/h, and the light stays red longer, too. So you're penalised.' 'How does that affect the motorist in the lane next to you?' I ask. 'If they've stuck to the speed limit, I mean?'

'They have to wait longer too. That's one of the drawbacks of this system.'

'What do the locals think of it?' I ask.

'They mostly support these sorts of efforts to change drivers' behaviour.'

Then a motorist drives past, breaking the speed limit, and the frownie lights up. Prinsen says, 'Hey, Mark, can you let me have the specs for those?'

What exactly is going on here? I try to look at it from all possible points of view.

People living near the ring road, schoolchildren, and other Tilburg residents crossing the Cityring on foot or by bike don't have right of way because that would slow down traffic around the city centre.

Traffic managers and civil servants like Prinsen and Clijsen are doing their very best within the limits of traffic management logic — that is, that traffic mustn't come to a standstill and conflicts must be avoided — to organise everything as fairly as possible.

Residents are mostly content with these interventions.

Yet there's a collision on the Cityring every three days.

If motorists drive too fast, they don't get a traffic fine, they just have to wait longer for the light to turn green.

And if you're a local resident who wants to get something changed, your go-to guy is St Nicholas.

'Wouldn't it be a lot easier to make this a road where you can't drive so fast?' I ask.

Clijsen nods. 'Our *wethouder* responsible for local traffic says the onus should be on the motorists to cross over at intersections, not the pedestrians. So we're doing all kinds of experiments at the moment.'

We walk over to look at one. Outside Tilburg's main theatre, saplings and shrubs in pots have been set out on patches of astroturf, so drivers are forced to slow down as they approach. The local authority likes the idea, but this time it's the local media that disapprove. 'A "minigolf course" (for  $\notin$ 150,000) on the Cityring', complains regional newspaper *Brabants Dagblad*, reflecting the *vox pop*.<sup>10</sup>



Traffic calming measures outside Tilburg's main theatre.

Source: BD.nl © Bas Vermeer.

Prinsen and Clijsen want to show me one more innovative traffic light at the intersection we've just reached.

A small loudspeaker, with an explanatory sign, has been installed on the side of the road, where cyclists and pedestrians wait. It plays the music Tommy-Boy used to listen to. Thirteen-year-old Tommy-Boy was cycling along, listening to music on his mobile, when he was run over and killed by a woman driving along the provincial road near Bussum, North Holland.

'Makes you think, doesn't it?' says Clijsen.

I nod. I'm familiar with these memorial loudspeakers, which we have in Rotterdam as well: the idea was dreamed up by students at the city's art academy. Tommy-Boy didn't ride through a red light. He cycled out of the woods, his attention elsewhere, and crossed a road where he didn't have the right of way. After his death, the crossing was altered. Now there's a fence at the end of the cycle track, so that cyclists have to dismount. If you're a motorist, you can carry on driving just as fast as ever.

'Could you put up another loudspeaker and sign for drivers?' I ask Clijsen. 'So they realise what the danger is too? That they could run over a child and kill them?'

My voice is more vehement than I would like.

There's an awkward silence.

At home, I look at my photos of the complicated intersection. Was I really being fair, with that last question?

Luc Prinsen and Mark Clijsen are doing everything they can to keep speedsters out of the system. But these specialists, with their technical backgrounds, can't make decisions about who has the right to use the road: those who live and go to school here; or those who need to pass through on their way from A to B. Within strictly defined margins, they can install and fine-tune a traffic control system. They can try to make these systems ever smarter, even have them talk to your smartphone. But the reason such things are needed in the first place is beyond their remit.

Why do headteachers have to beg for a pole with a button so that schoolchildren can cross the road, and why don't they have a seat at the table when plans for a ring road like the Cityring are under discussion, so they can say: 'If that's what you're going to do, we want a zebra crossing at the very least'?

I ring Bas Evers, the headteacher. He says he began by asking for a zebra crossing, but the local authority said that the pedestrian lights, with their short green phase, were the best that could be done. The lights are better than nothing, but as far as he's concerned they're not enough. 'Our school is a Montessori school based on principles like personal responsibility and learning to let go. But I understand why some parents of ten-year-olds still walk them to school if they have to cross a road like this one.'

I think of my son's school, which has a similar set-up. Of how I sometimes walk into the street like a lollipop lady and gesture at a motorist

to stop. Of how some drivers stop of their own accord, while others behind them start honking their horns.

Could we get a set of traffic lights too? A zebra crossing, or give-way markings for motorists? Or perhaps a button for drivers to press — why is there no such thing?



Source: Stefan Verwey, 1980.

# School Drop-off Zone

Marco and I get to know each other better through private messaging on Twitter. He turns out to have a similar problem to Bas Evers in his local area. The big difference is that Marco lives in a new neighbourhood in Ede, a small town in the east of the Netherlands. The area in front of his children's school has yet to be laid out. It still has the potential to be put to all kinds of uses: it could be a playground, an area for parking bicycles, a place for people to sit, a football field.

#### Cycling Professor @fietsprofessor

Now they've got a plan for the area in front of our local school. They're going to turn it into a quick drop-off zone. That's a sort of roundabout where you can drop your child off safely and drive away without further ado — traffic engineers say it's safer and faster than parking your car in a space and then manoeuvring out of it.

**Thalia Verkade** @tverka You don't sound too happy about that.

#### Cycling Professor @fietsprofessor

I'm not. It's not a drop-off zone, it's a push-off zone — you boot your kid out of the car and straight into the main entrance, and off you go. That's not what the school wants at all. My daughter's teacher has just reminded parents again that it's school policy for them to accompany their children into the classroom.

**Thalia Verkade** @tverka Then how come they've already agreed on this plan?

**Cycling Professor** @fietsprofessor The traffic engineer is the only expert who gets a seat at the table with the local authority.

**Thalia Verkade** @tverka Why haven't they involved an urban planner?

#### Cycling Professor @fietsprofessor

Urban planners tend to be involved at a higher level, in planning the new neighbourhood as a whole. But there are no specialists in child development, ecology, health, or psychology involved either — even though what we're talking about here is the area around a school.

When I visit him later, Marco shows me the space in front of the school. He lives in an area that used to belong to the viscose factory ENKA, which later became the chemical company Akzo (of AkzoNobel). In front of the school, which is to be set up next year in the former factory workers' canteen, there's a large patch of sand. What is built here will set the tone for the new neighbourhood.

This space could be transformed into an area for children to play, where they can walk, run, or cycle to school, where motorists come second. But it seems that the die is already cast: it's to become a space where we teach children to pick their way safely through traffic on their way to school.

### A Barbecue in a Parking Space

While I'm learning just how much the logic of traffic engineering determines the way our residential areas are designed, a journalist colleague, Jesse Frederik, is discovering surprising things about parking spaces.<sup>"</sup>

There are almost as many parking spaces in the Netherlands as there are people, it turns out, which means there are twice as many parking spaces as there are cars. If you were to put all those spaces together, they would take up more room than the total surface area of Amsterdam. I later discover that the United States is even worse, with two billion parking spaces for 250 million cars; more parking space is allocated per car than housing space per person.<sup>12</sup>

Jesse writes: 'Over two-thirds of these parking spaces [in the Netherlands] occupy public land, and 92 per cent of them are provided totally free of charge.'

Public land. Aka the street. It's only now I'm taking a proper look at the issue that it strikes me: the street is a place that belongs to everyone, and it's there for everyone. Or it should be. It's a shared space where people should be able to do just about anything they want, provided they can agree on it.

Copyright @ 2022. Scribe Publications. All rights reserved.

We could use a parking space to set up a barbecue. Or, as Jesse suggests, plant a small vegetable garden. But that's not allowed. Nor can you park your bicycle or put your wheelie bin in a parking space. The only thing permitted there is a car. Why is that?

In his article, Jesse refers to various economic surveys that show how heavily parking is subsidised in Amsterdam. The market value of the land taken up by one parking space is about  $\notin$ 3,600 a year, but an annual parking permit costs only  $\notin$ 535. In contrast, the average cost to buy a house or flat is  $\notin$ 5,655 per square metre.<sup>13</sup> The situation is similar in the London borough of Westminster, where residents pay £8,000 a year to rent living space the same size as a parking spot, but only £158 to park their cars.<sup>14</sup>

In Rotterdam, an annual parking permit costs even less — just €69 in 2019.<sup>15</sup>

'We have to make parking a lot more expensive,' writes Jesse. He reckons that's 'the solution to just about everything'. It would bring in more money for the local authority while providing the opportunity to repurpose this valuable street space.

'You could come and take a look in Ede,' says Marco, when I send him Jesse's piece via Twitter, 'if you want to see how it works in a new neighbourhood.'

Where you could do things differently. And so I go to Ede.

# The Impact of a Guideline

On arrival at Ede-Wageningen train station, most passengers disappear into other trains: this is a junction with a direct service to Utrecht and Amsterdam every quarter of an hour. That was one of the reasons why Marco moved here recently from Amsterdam.

**Cycling Professor** @fietsprofessor I can get to work within the hour. It hardly takes any longer than from Amsterdam-Osdorp. And I get a generous travel allowance into the bargain. Insane when you think about it. **Cycling Professor** @fietsprofessor Why do we subsidise people who choose to live a long way out?

**Thalia Verkade** @tverka Because not everyone can live in Amsterdam?

I touch out with my smartcard and follow Google Maps to the address Marco has sent me. He lives on the corner of a little street, newly built and still covered in sand.

There's a smell of fresh plaster indoors: the walls have just been redone because something wasn't quite right after construction. Marco fetches his three-year-old son's balance bike from the shed in the little garden and we set off for a walk round the neighbourhood, which is still a work in progress. There are piles of sand everywhere and lots of houses are still waiting for walls or a roof.

Leaving the garden, we enter the parking area that forms the centre of the block of houses. There's scarcely a car in sight: everyone who has one is clearly away from home at this time of day.

'Do you know how they decide the number of parking spaces in a new neighbourhood?' asks Marco.

'There's a standard for that,' I say. I know about it from Jesse's piece. It's a guideline set by a Dutch institute called CROW.

'Spot on,' Marco replies. 'Go on, have a guess what standard they apply here, five minutes' walk from a station used by intercity trains, with a direct service to Utrecht and Amsterdam four times an hour.'

'Hmm ... so how many cars would you need?' I ponder aloud. Turning the corner, we see metal sheeting laid on the sand to accommodate traffic.

'1.7,' says Marco. 'There are 17 parking spaces for every ten homes. Nearly everyone here can have two cars.'

I look around me at what was once the Veluwe heathlands. A hare bounds away from beneath a sapling. They have literally paved paradise to put up a parking lot. In the sections of the street that are already finished, the parking spaces are demarcated with a line of white stones. These spaces are long rectangles, slightly broader than the pavements.

'They've set aside plenty of space. Stint on parking space, they think, and you'll get complaints from residents later on,' says Marco. 'So you end up with four to five football fields worth of parking spaces, and that's without even counting all the driveways and the extra room for manoeuvring in and out.'

'Look out!' I yell abruptly.

Marco's young son has trundled off on his bike, and all of a sudden I spot a car on its way in. The little boy has already come to a standstill.

I try to imagine what possible justification there might be for 1.7 cars per home here. People need a car to reach places where the train doesn't stop, or to visit relatives living in villages, for instance, or they might have a car or van for their work. Not everyone has an office in central Amsterdam. But nearly two cars per household in a new housing estate near a major train station is definitely a lot, especially if you think what else you could do with all those hectares of public land.

'The developer targeted mainly Ede locals,' Marco explains. 'The fact that we're right next to a station with intercity services wasn't mentioned in the sales brochure. When they later found out that young families from the west of the country wanted to live here too, they added that the A12 is only a few minutes' drive from here — but not that you're only a few minutes' walk from the train.'

'But how about people from Ede who have relatives living in the villages nearby, for instance,' I ask. 'They need a car, don't they?'

'I need a car now and then too,' Marco replies. 'But why is it the norm to have nearly two cars per house? The car's parked in front of the door, the bike's in a shed. Why haven't I been allocated a parking space for my bike?'

We stroll around behind a skeletal structure with huge arches — the monumental façade of the ENKA factory, where viscose, artificial silk in the most exquisite colours, was produced for 80 years. Then we reach the fringes of the housing estate. I spot a lot more vacant parking spaces.

'No one ever parks here,' says Marco. 'Too far to walk. Soon they will put an enclosed football pitch for teenagers here, so the kids can have a kick around without damaging any cars. It's being discussed already — why not let those kids stretch their legs a bit before their game?'

'And you're against that?'

'It's noticeable that everyday activities get relegated to the edge of our neighbourhood, just so we can park our cars right in the middle. What I find strangest is how we apparently have no choice in the matter. The local authority refers to the parking standard set by CROW. But that's just a guideline. They aren't obliged to stick to it.' He points past the parking spaces at the green area beyond. 'CROW's over there, incidentally. You can walk over in no time.'

We'll be returning to CROW together. But not today. We walk back to the housing estate, towards the as-yet unbuilt area in front of the school attended by Marco's children.

'The school drop-off zone comes from a CROW recommendation too,' Marco says. 'From their computer tool for designing parking areas near schools and childcare providers.<sup>16</sup> The traffic engineer has to fill in all sorts of information, such as the size of the town, the position of the school catchment area, and the number of employees and visitors. Then the tool spits out the suggested number of parking spaces and recommends a zone where children can be dropped off quickly, as CROW thinks that's the safest solution. The traffic engineer adds up all the figures and presents them to the local authority — here's the blueprint for the area in front of your school, with a quick drop-off zone, just as prescribed.'

The fact that we use guidelines like these as a reference point has significant consequences, Marco explains. 'If you want to put the area in

front of a school to a different use, you're not just a person who wants something else, you're someone who opposes the norm, an activist. But I really don't want this drop-off point. I'm going to see if I can start a discussion about it with the local authorities. And with the other residents.'

## **Bigger and Bigger Cars**

Walking along my own street in Rotterdam, I decide to count the parking spaces. There are about 50 spaces for the 50-odd houses, nearly all of which are divided into two flats. That's a lot fewer than in Marco's neighbourhood. But then there is a big car park around the corner.

I search online for the parking standard that applies to this part of town: it's one car per flat.<sup>17</sup> That's tight. By evening, the pavements along our street often have cars illegally parked on them. And the spaces themselves are narrow. A neighbour's Tesla won't even fit into one.

Why is that? I check the requirements for parking spaces. It turns out there's a norm for these too, the Dutch NEN standard. A local authority that wants to meet this standard must ensure that parking spaces at right angles to the street are at least 2.4 (preferably 2.5) metres wide and at least 5 metres long.<sup>18</sup> Again, this isn't a requirement or a law, it's a guideline.

The suggested dimensions are based on a 'model vehicle'.<sup>19</sup> The model gets a little longer and broader every few years, because car manufacturers keep on making their vehicles bigger. Between 1973 and 2008, for instance, the Honda Civic grew from 1.5 to nearly 1.8 metres wide and from 3.55 to 4.27 metres long.<sup>20</sup> And just compare the old Mini with today's version.

That's why the parking spaces in Marco's new housing estate are not only more numerous, but bigger than those in my street. Since it's over a hundred years old, the parking spaces were slotted in here decades after it was built, making the best of the space available.

The world of toys reflects these changes. Lego offers a particularly clear illustration: standard Lego cars are now six studs wide, compared with just four in the 1980s. And they take up more space in Lego City. The faint cycle lane at the side of the road has vanished, while the 'pavement' has shrunk by

two studs, or even three in some versions. The space allotted to cars has been discreetly expanded, at the expense of the rest of the miniature city.



# etti's Constant) and its Impact

Not having a car of my own spares me another problem: I rarely find myself stuck in traffic jams. Why exactly did I think congestion was such an important issue, again? Not that I am the only one. The radio gives traffic updates at half-hourly intervals. Is that because we attach so much importance to traffic jams — or do we only think they are important because they're mentioned on the radio every 30 minutes?

And here's another odd thing: if our society is so over-aware of this problem and so over-focused on tackling it, how is it we haven't been able to find a solution? I'm keen to write about this, so I do some preparatory reading on the subject. In a book recommended to me by a reader, I find a list of predictions and vows to tackle the issue stretching back over many years. The result is a spectacular litany of broken promises:

- 1. In 2010, traffic jams were three times as long as in 1988, although the government of the day had vowed to reduce them to a third of the length.
- 2. In 1997, it was predicted that there would be no more traffic jams in 2010 than in 2000. In fact, the total number of traffic jams increased by 50 per cent.
- 3. In 1993, it was expected that the length of traffic jams would stay roughly the same until 2000. In fact, their total length almost doubled.<sup>21</sup>

Over the same decades, I discover, the Dutch motorway network expanded significantly, from about 2,100 kilometres (about 1,305 miles) in 1988 to nearly 2,500 kilometres (about 1,553 miles) today.<sup>22</sup> And, like parking spaces, motorways have become much broader as well. All this to resolve the congestion problem.

Yet, as we know, the tailbacks haven't got any shorter, nor are there fewer of them. Instead, there are more, and they've lengthened. There are plans to add a further 1,000 kilometres (about 621 miles) by 2030, though it is acknowledged that even this additional road surface won't suffice, so further congestion is inevitable.<sup>23</sup>

What's going on here?

One evening when I'm out on my bike I run into a new motorway extension. It's spring, and my partner, our children, and I are staying in what we call our dacha: an allotment with a wooden chalet in a complex called Eigen Hof ('our own garden') just north of Rotterdam, in the wedge between the two major roads, the A20 and the A13, a stone's throw from the Kleinpolderplein junction familiar from road congestion updates on the radio.

Eigen Hof is a green island with a few hundred allotments that's buffeted by the endless surf of traffic. 'Like living on the coast,' the late writer Jan Wolkers described the sound.<sup>24</sup> But there are no cars within the allotment area itself. Within the confines of Eigen Hof, the rights of the slowest come first — the allotment owner on his knees, worrying away at the weeds under his hedges. You can't even cycle along the paths in the growing season, or at least only if you're a child.

Once ours are in their dacha bunkbeds, I go for a spin on my old red sports bike, heading towards Delft. But I don't get very far. There's a post on the cycle path with a notice about something called De Groene Boog ('the green arc'). The notice is the work of a consortium of building companies that will be laying 11 kilometres (over 6.5 miles) of new asphalt over the next few years. The plan is to extend the A16, which runs up from the south and currently ends at the Terbregseplein junction. I ride off in the other direction, in a disappointing half-loop, then cycle back to our chalet, where I search online for information about the new motorway. Pex Langenberg, the member of the Rotterdam local executive responsible for traffic, promises that people won't be able to see, hear, or smell the motorway.<sup>25</sup>

This new connecting road, I read, is 'a missing link'.<sup>26</sup> It's going to be surfaced with the best noise-absorbing asphalt known to man, and in the near future, of course, the only cars on it will be electric ones, as the *Algemeen Dagblad* writes. 'De Groene Boog already offers a sustainable experience.'<sup>27</sup>

All of this has passed me by, apart from the fact that my own sustainable green experience — an evening ride on my bike — was cut short. Why are they building this in the first place? According to a brochure for local residents, 'the 11 kilometre-long A16 from Rotterdam will soon enable traffic on the A13, the A20 and nearby local roads to flow through more smoothly'.<sup>28</sup>

Yet another stretch of asphalt to combat congestion. But what about those broken promises?

The author of the book exposing those failures, Arie Bleijenberg, is happy to give me an explanation. We arrange to meet at Delft train station, at 9 am on a Tuesday.

There are plenty of different ways to cycle to Delft from my allotment, and it's quicker than first cycling to Rotterdam Central Station and taking the train. Besides, the weather's fine. But I leave too late and end up in a tailback of several hundred students cycling to the university: no 'chip cone' here yet. In the bike parking area under the station I hastily spray deodorant under my shirt — they should have showers here! — and pelt up the escalator to Starbucks, where we've arranged to meet.

Bleijenberg, a softly spoken man with greying hair and large spectacles, spent many years as a senior civil servant at the Ministry of Transport, Public Works, and Water Management, as it was then known. Now he's an independent mobility expert working for the research organisation TNO on replacing ageing bridges and locks.

I tell him I just don't understand why we can't find a solution to congestion, and that there are plans for yet another new section of motorway near a place where I spend a lot of time. What's going on here?

Once our espressos are ordered, Bleijenberg gives me his explanation, in a pithy soundbite that would fit nicely on a traditional blue Delftware tile. 'New infrastructure attracts new business, bringing more congestion.'

In other words, build a road or a railway line and people will settle nearby, producing more traffic. So the congestion increases.

'The fact that a motorway attracts traffic congestion is statistically proven, too,' Bleijenberg continues. 'Canadian researchers have measured this effect in several large urban regions in America. Lay I per cent more asphalt, and you get I per cent more traffic. The fundamental law of road congestion, they call it. Asphalt has been shown to attract cars: you can't get rid of congestion by building more roads.'

And then Bleijenberg launches into an account of the discovery made by Geurt Hupkes, a transport economist who, in the 1970s, researched how often, how far, and at what speed people travelled daily, all over the world.

Regardless of whether they lived in Peru or Singapore, Germany or the United States, the Netherlands or the Soviet Union, and no matter whether they had a car, a bicycle, or just their own legs, most people turned out to spend between 70 and 80 minutes a day getting about, if you added up all the trips to friends and family, work, and the shops. Hupkes called this the 'law of constant travel time and trip rates': the concept is also known as 'the travel time budget' or Marchetti's constant (after the Italian physicist Cesare Marchetti).

This aligns with what Bleijenberg explained to me about new roads attracting new business. Give people speedier transport, and they won't use it to spend less time travelling, but to move further afield. Give a company the capacity to cover a larger area, and it will use that mainly to achieve economies of scale, by establishing a single large office at one location and closing down small local branches. As a result, the places we need to travel to are increasingly far-flung. We're being scattered in all directions like particles in a centrifuge.

Between 1962 and 1972, Geurt Hupkes found that the average number of kilometres Dutch people travelled every day increased by over 50 per cent, to 32 kilometres (nearly 20 miles). It was precisely during that decade that everyone in the Netherlands acquired a car.

He also found comparable figures for a large number of cities in the United States and both Western and Eastern Europe.<sup>29</sup> While the average travel time remained about the same for everyone, the annual distance covered per person rose from 7,000 kilometres (nearly 4,350 miles) to 11,500 kilometres (nearly 7,146 miles) in the course of the decade.<sup>30</sup>

#### We're Travelling Further All the Time

Ever since the 1950s, we've been increasing the distances we cover in the same length of time





Sources: PBL Netherlands Environmental Assessment Agency (based on figures from Statistics Netherlands), Onderzoek Verplaatsingsgedrag (Research into Mobility Behaviour), Onderzoek Verplaatsingen in Nederland (Research into Mobility in the Netherlands), Schiphol Airport, KiM Netherlands Institute for Transport Policy Analysis.

Copyright © 2022. Scribe Publications. All rights reserved.

The law of constant travel time and trip rates, and the fundamental law of road congestion, are revelations to me. They explain very clearly why those traffic jams aren't about to disappear. But what I don't get is this: why do we carry on building 'missing links' and adding more lanes to motorways when this will only increase congestion? They must know this in the ministry where Arie Bleijenberg worked for such a long time, mustn't they? Rijkswaterstaat, the organisation formally responsible for implementing the ministry's decisions, and which also directs road planning and construction, is definitely aware. As long ago as 2001, it issued a publication of 95 pages, no less, about these laws.<sup>31</sup> And Amsterdam University's department of urban and regional planning knows about them too. When I ask Marco about it, he summarises the concept of constant travel time as follows:

#### Cycling Professor @fietsprofessor

Contrary to what you might think, it's not the distances we travel that stay constant, it's the time we spend travelling, while the distances are variable: they keep on increasing.

That's the centrifugal effect I referred to. Yet we continue to build more traffic lanes and tunnels. And more metro and railway lines. Because the law of constant travel time applies to all modes of transport. Thanks to the Intercity Direct service, it's easy for me to live in Rotterdam and work in Amsterdam. Once it would have taken 16 hours to walk from one city to the other, but now the journey takes just 41 minutes by rail. More spectacularly, 'super-commuter' Kate Simon was interviewed by the *Guardian* in 2018 about her weekly commute from Nice in the south of France to her senior marketing job in London.<sup>32</sup> Cheap air fares, coupled with the growing use of teleconferencing tools, have put 'super-commuting' within the reach of more people than ever before.

'There's no way of saving travel time,' Bleijenberg concludes. 'The only gain you can achieve is the distance you cover. And that's why the history of mobility can be viewed as an ongoing reduction in travel friction.' Again, that sounds like something to do with colliding particles. And indeed, 'travel friction' turns out to be a technical term. 'It means we're forever trying to travel faster, more cheaply, and more comfortably over ever-increasing distances, but in the same amount of time,' Bleijenberg says. He's currently looking into how we can do that more sustainably: if we're not going to travel any less, then at least we could be polluting less on our journeys. He is engaged in a research project on the use of synthetic kerosene, produced using wind and solar energy, as an aircraft fuel.

'But won't that just push traffic congestion into airspace?' I ask. 'Won't it mean that we'll all have to queue up to board a plane instead, and won't it result in more and more congested skies?' After all, making cars 'cleaner' hasn't done anything to ease pressure on parking spaces or reduce tailbacks. And then something extraordinary happens. In the middle of Starbucks, Arie Bleijenberg starts reciting a poem in a dreamy voice:

I didn't come here purposefully, you know — I wandered here, I wandered there at will because the tiny flowers I so love grow beneath tall trees in woodlands deep and still But now I'm here, I'll readily concede that I've arrived, yes, I am here indeed.<sup>33</sup>

'Wow,' I say.

'Pierre Kemp,' says Bleijenberg. 'It's lovely, isn't it? It's his attitude to life I like, too. And that's something else I keep thinking about: *why* are we so focused on increasing speed and efficiency? But I don't think we can tackle all our problems at the same time.'

I recognise that train of thought: ruminating on technical solutions bike highways, electric cars, synthetic kerosene, showers at work — then, suddenly, lines from a poem, or, in my case, memories of a blissful, carefree holiday, emerge; thoughts that we swiftly thrust aside.

Because what we do at work has to be functional, doesn't it?

# The Asphalt Machine Behind our Congested Roads

I publish a long article about the laws of road congestion and constant travel time and trip rates. But I have no answer to the question of why we continue to add extra lanes to motorways in the hope of avoiding congestion, when it's so patently obvious that it will fail.

This has to wait until I get a call from Jan Korff de Gidts. He's read my piece and wants to explain why we don't stop laying more asphalt, even though we know it won't help.

Korff de Gidts has been monitoring motorway construction by Rijkswaterstaat (the executive department of the Ministry of Infrastructure and Water Management) for more than 40 years. He began when the forest he loved, Amelisweerd (in the province of Utrecht), was uprooted to lay a ten-lane motorway through the area. In the 1970s and 1980s he was one of the activists who appealed against this development to the Council of State, thereby saving more trees from being felled. In the end, the road was laid in a cutting, which helped to limit noise pollution to some extent. But they failed to prevent it from being built altogether. Now Korff de Gidts is in the process of analysing a further extension of the same road, because the fundamental law of road congestion applies in this case too. It seems even a ten-lane motorway isn't enough to absorb expanding car use.

According to Korff de Gidts, the machine that's covering the Netherlands in asphalt runs automatically: widening a road is no longer a political decision. Why is that? 'The government uses predictions of road congestion that are based on traffic models. The prognoses contain a thing they call the I/C ratio. The I stands for intensity, the expected pressure on the road, and the C for capacity, how many cars can drive through in an hour.'<sup>34</sup>

The government policy documents setting out these prognoses, and the papers on the state of mobility, are based on a given level of economic growth and increasing pressure on motorways, leading to an increasingly unbalanced I/C ratio. If the expected motorway capacity is too low and the intensity too high, Rijkswaterstaat gives the minister for infrastructure and water management a warning: we're on our way to gridlock.

'The politicians have linked this reasoning to policy and planning,' Korff de Gidts explains. 'We now believe the prediction, so we make sure it's fulfilled: the more roads there are, the more cars, and the more new or wider roads.' After all, as we have learned, asphalt always attracts more cars in the long term.

The Mobility Policy Document published in September 2004, based in its turn on a civil service document about the I/C ratio, shows clearly how the asphalt machine works.<sup>35</sup> The future the document referred to was 2020. This was the forecast:

#### Traffic delays to double

By 2020 there will be traffic hold-ups not just during rush hour, but also, increasingly, at times of the day that are quieter now. In the absence of any further policy measures, traffic delays on the network of arterial roads and motorways will increase to twice the 2000 level by 2020. That can also be seen from trends in vehicle hours lost.<sup>36</sup>

This is another prediction, like those listed by Arie Bleijenberg, about how bad things are going to get. Such forecasts provide the basis for policies which, while doing nothing to mitigate road congestion, do increase the amount of asphalt on the ground. The 2004 Mobility Policy Document advocated the massive expansion of the entire Dutch motorway network, including the widening of the Amelisweerd cutting.

It was also at this time that they started looking into extending the A16 near Rotterdam, the project later christened 'De Groene Boog'. Work on this project, which I passed on an evening bike ride from my allotment, has only recently got underway. So the analyses on which the development is based are now over 15 years old.

A 'vehicle hour lost' refers to a car stuck in a traffic jam for an hour, or 60 cars stuck in a tailback for a minute each. The aim is to reduce the number of vehicle hours lost as far as possible. 'If the models that produce the prognoses show that traffic intensity is going to exceed capacity by a long way, traffic engineers say the number of vehicle hours lost is going to increase,' explains Korff de Gidts. 'And then you get demands to make the

roads wider. The media talk about bottlenecks, gridlock and clogged arteries.'

But in a system based on the logic of vehicle hours lost, something fails to happen that should, says Korff de Gidts. Motorists aren't offered any alternative, such as cycling or taking public transport, because vehicles can't make such a choice, and vehicles are the focus of the system. 'But people aren't vehicles.'

Nor is the notion of growth for growth's sake questioned. 'The new motorway will attract more motorists again, and that, paradoxically, means it'll produce an economic profit, because road users can drive faster and new road users will be sucked in. That's how the asphalt machine keeps on going.'

So more asphalt is laid, based on a line of argument that applies to vehicles, even though we've already known for a long time how people will react to the expansion: they'll travel even longer distances.

Korff de Gidts's account reminds me of the DOCTOR evaluation: people as projectiles. Similarly, the models used by the Ministry of Infrastructure and Water Management and by Rijkswaterstaat take precious little account of human behaviour or of how people respond to and interact with their surroundings. And they take no account at all of the fact that people, unlike their vehicles, are capable of making choices.

Korff de Gidts hasn't finished what he has to say yet. 'Around cities, it gets even worse. I'll send you a diagram. Got your email open?'

'Yes, go ahead.'

# **The Bottleneck**

If this is your problem...

#### motorway



...then this isn't your solution



Source: Cees van de Brink, 'Kracht van Utrecht' group, adapted by De Correspondent.

'As you can see, traffic models represent motorways in a misleading way: they don't take any account of the motorway's environment,' says Korff de Gidts. 'But cars travelling along a major thoroughfare towards a smaller road have to go into cities and out again, don't they? And you can't usually widen the road in a built-up area. But central government just says: not our problem. So that's how you end up with bottlenecks.'

That's what the picture shows: more and more bottled-up cars forced to exit through too narrow a gap, so that their drivers instantly forfeit any travel time they may have saved on the newly widened motorway. 'So we fill up all the available space around and in cities with more and more cars,' says Korff de Gidts. 'By the way, do you know where the money comes from to build the roads which then get clogged up with even more slow-moving traffic?'

'I haven't a clue.'





Source: D.A. Place, 'Urban transportation: policy alternatives', in Hanson & Giuliano (eds), *The Geography of Urban Transportation*, 2nd edn (Guilford Press, 1995). Reproduced with the permission of Guilford Press, adapted by *De Correspondent*.

#### Cycling Professor @fietsprofessor

And then people will use their cars for other trips. After all, they're conveniently parked in the allotted space at the front door.

Thanks to all the space we set aside for cars, they continue to proliferate. There are now 8.5 million in the Netherlands, a country of 17 million people.<sup>37</sup> The United Kingdom has a similar ratio: 31.7 million for a population of 67.22 million. In the United States, it's 108.5 million cars for 329.5 million people, and in Australia there are 19.8 million for 25.69 million people. China has 224.74 million cars — one car per three households.<sup>38</sup> The total number of passenger cars in the world is estimated at 1.4 billion and rising each year. Lease cars account for half of all new cars in the Netherlands.<sup>39</sup> A third of these new vehicles are 'four-by-fours' (SUVs), aka 'anti-social killing machines' (if knocked down by one of these, a pedestrian is between two and three times more likely to die).<sup>40</sup> Our roads are becoming more dangerous and more congested, while our cars are getting bigger and taking up more and more space.

And that trend costs a lot of money too — more than people imagine, as Arie Bleijenberg later tells me. If a driver knocks you down on the road, for instance, or if you develop an air-pollution-related respiratory complaint and run up medical bills, traffic engineers won't count your problems as part of the cost of car use.

Bleijenberg, however, *has* totted up those costs on the basis of government figures. According to his calculations, a bill for €21 billion goes unpaid every year — more than double the planned annual budget of the Ministry of Infrastructure and Water Management. 'Those costs are passed on to taxpayers, accident victims, and people with traffic-related health problems.'<sup>41</sup>

At the same time, accidents causing permanent injury can have certain economic benefits — albeit of a perverse kind. A person who suffers serious brain damage as a result of a traffic accident is a worker removed from the economic system. Yet the ongoing care that he or she then needs creates at least one job. And then there are all the technical devices that need to be developed for that person, as well as transport tailored to their individual needs.

How can you weigh the costs and benefits of such systems against each other? Is it even possible or ethical to do so in economic terms?

Rail travel doesn't involve the same extensive hidden costs. And since a train departs again with new passengers on board, far less public space goes to waste. That's why I initially see rail travel as a good alternative.

But then confusion strikes. Billions from the Economic Structure Reinforcement Fund were invested in rail too. As a result of the increased capacity, people are now taking trains more and travelling longer distances — and trains are increasingly oversubscribed.

Where will it end?

In the middle of Groningen's agricultural landscape, there's now to be a 3-km-long test centre for a hyperloop, the vacuum train that is Elon Musk's brainchild and which is supposed to whisk passengers within half an hour from Amsterdam to Paris or from New York to Washington. Dutch Railways are subsidising the experiment.

Should we really go on increasing speed, extending rail networks and airports, and making roads wider if the main effect of such change is to encourage people to travel even further? Will it really become second nature by 2050 to take a hyperloop or flight to work, in another country? And what then? Will we be taking interplanetary trips — to Mars with Elon Musk or Amazon's Jeff Bezos — because the conditions on this planet will no longer be bearable?

### **Building in the Green Heart of the Netherlands**

The more I learn, the more questions arise. I talk to my colleague Jesse Frederik again. In his view, the idea that increasing speed only means that we'll cover longer distances is short-sighted: 'Land that's further away is cheaper. That's why industrial estates are always a long way out. That's why



the figure is



The Van Ostadestraat in De Nieuwe Pijp, 1981.

Source: Beeldbank Amsterdam (Amsterdam Photo Archive).



The Van Ostadestraat in De Nieuwe Pijp, 2017.

Source: Meredith Glaser.

#### Cycling Professor @fietsprofessor

Population growth might well be the reason we need to say that a standard parking space 1.7 metres long just isn't on any more. Making motorways wider just isn't on any more. The way we used to do things worked for a while — and now it no longer does. We mustn't build any new housing estates that are only accessible by car. And from now on, they must include all the basic facilities people need: schools, a library, a medical centre.

Marco sends me an image including two satellite photos.<sup>44</sup> The first of these shows the Valburg junction, an enormous four-leaf clover in the Betuwe region where the A15 and A50 motorways intertwine. The second, taken from the same altitude, shows the village of Valburg, which lies next to the junction.

You can clearly see that the junction is the same size as the village, which has nearly 2,000 inhabitants. A single motorway junction, in other words,

takes up as much space as an entire village.



The Valburg junction (below) takes up the same space as Valburg village (above). Source: Google Maps. Could we organise our country in such a way that it would no longer be necessary to commute, as so many people have to today? I try to imagine what it might be like. The existing mega-carparks and spaghetti junctions could be replaced by residential areas, which would need to provide jobs, shops, schools, a library, and a hospital. That would give people's lives more of a local focus. But what if you wanted to change jobs, but you didn't want to or couldn't move house? Wouldn't such a change place some people at a disadvantage, particularly those with limited choice in finding new employment?

Everyone wants to be mobile: mobility is largely equated with freedom. No one wants to be bound to a particular location.

How complicated this is when you look at it in detail. I message Marco:

**Thalia Verkade** @tverka It's a painful thing, changing the status quo.

#### Cycling Professor @fietsprofessor

That's the pain of half a century of spatial planning based on the notion that we can cut people's travel time by increasing the speed of travel. But what we're doing now hurts too, doesn't it? It's precisely by wanting to have a house and garden for everyone and, at the same time, wanting to make cities accessible to everyone, that we've already yielded up all our natural environment and open areas to motorways and housing estates that are ghost towns during the day. And that's the result of a political decision, too.

I keep losing sight of the fact that our status quo also represents a choice, with its pros and cons. What we have now seems like such a natural state of affairs. It's only after quite a while that it dawns on me why I can't work out how we might change the existing situation.

I've stumbled across one of the major issues in urban and regional planning: how space and traffic are interlinked, and how they could be interlinked.<sup>45</sup> That's a complex political issue on which everyone has their own views, and to which it's impossible to find a single solution.

Yet at the moment we're building motorways where a technical formula tells us we have to, to deal with bottlenecks in a pipeline system which, far from floating in thin air, lies squarely in our daily lives.





On my bike trips from my allotment, with all these questions running through my mind, I watch the 'green arc' being built. First there's the digging: molehills 2 metres across. Then red and green pennants are planted in the soil. Then come mountains of sand. On top of these, I spot excavators that look like toys, so high up and so far above the horizon.

What a gigantic undertaking this is. The projected costs amount to almost €1 billion.<sup>47</sup>

It's technically advanced too. The new road will be linked with perfect precision to the other two motorways. The project is as meticulous as openheart surgery. And that's just what it is. 'The A13/A16 will form a bypass around central Rotterdam,' in the words of the brochure aimed at local residents.

I ride through the Lage Bergse Bos, an area of urban woodland north-east of Rotterdam, under which De Groene Boog is to be laid. Long bundles of felled trees lie along the route of the future motorway. I stare at the information panel telling me that some trees had to be removed in any case because of ash dieback. What was here will be replaced by a more attractive natural environment, so they promise.

I send a photo to Marco.

**Thalia Verkade** @tverka A bypass under the city's lungs.

#### Cycling Professor @fietsprofessor

I'm just reading Richard Sennett's *Building and Dwelling*, which discusses where the whole notion of arteries and bypasses for traffic comes from. I'll send you a summary.

I read what Marco sends me and buy the book. Richard Sennett, an American sociologist interested in towns and cities, has looked into the origins of the idea that urban settlements depend on circulation.

The fact that human blood is pumped around the body was discovered in the 18th century. From then on, circulation became a familiar metaphor for the workings of large-scale human structures like cities.

Sennett writes about Paris. After a terrible cholera epidemic and a major uprising in 1848, stemming from economic problems, the administration ordered the construction of a network of broad avenues straight through the medieval street plan. The old city, teeming with narrow, crooked streets, was streamlined, making it more difficult for rebellious Parisians to barricade the roads. The avenues provided enough room for military units on horseback, enabling them to control public space. These broad thoroughfares also provided enough space for rapid movement, which had previously been impossible and now suddenly led to dangerous situations: horses could now trot or gallop straight ahead for some way.

To regulate circulation through the city's arteries, one-way streets were brought in. In practice, that meant a ban on driving down certain streets in a particular direction: say 'Boo!' to horse-drawn carriages heading into oncoming traffic! The practice initially met with resistance. But steadily the street changed from a place for meeting other people into a place where traffic had to be able to circulate freely.

As I begin reading up on the history of traffic in the Netherlands, I discover what a strong impact the circulation metaphor has had here too. For instance, Frits Bakker Schut, head of public works in The Hague in the 1950s, ascribed 'anaemia' and 'hypertrophy' of the 'urban tissue' to the quadrupling during that decade of the number of cars on the road.<sup>48</sup>

Speaking about a contemporary radical plan to build two huge 'traffic arteries' through the centre of Utrecht, city councillor Wim Derks, a supporter, said: 'This diagnosis, the work of an expert, is as perfectly objective as a doctor's diagnosis of inflammation in a vital organ.'<sup>49</sup>

And Hendrik Kaasjager, Amsterdam chief of police, proposed in 1954 that a number of the city's canals should be filled in to create more space for motor traffic. Banning traffic from the city centre, as others had proposed in the past, would be tantamount to 'cutting off its circulation', as he put it.<sup>50</sup>

The idea that streets exist to channel motor vehicles, as if they were all thoroughfares, can now be seen in nearly every newspaper article that translates I/C ratios and Rijkswaterstaat's prognoses of road congestion into human language:

'The Netherlands nears gridlock'

Everywhere you look, the country's grinding to a halt. Gridlock on roads and rail, as well as in cities and airspace, is paralysing transport and the economy. These harmful effects are set to snowball, says an alarming report from the Ministry of Infrastructure. (*De Telegraaf*, 2017)

'Randstad suffers from clogged arteries'

Gridlock. The roads are full, the trams and trains brimming with passengers: a little longer, and the conurbation in the west of the country will reach paralysis unless something is done. But politicians underestimate the problems, and the budget available is paltry. (*NRC Handelsblad*, 2017)

'Royal Dutch Touring Club warns — even local roads increasingly congested, more congestion in 2019'

The number of traffic jams rose by 17 per cent in 2019. This congestion is no longer restricted to motorways. Even local and provincial roads are now increasingly prone to blockages.

(*RTL Nieuws*, 2019)

The metaphors of clogged arteries and paralysis suggest a collective problem that threatens our very lives. That's precisely why I was so keen to help solve the issue of road congestion — through bike highways. They call new motorways 'missing links' and 'bypasses', but you might equally well call them 'wounds' or 'scars in the landscape'.<sup>51</sup> Adding more lanes to a motorway in order to tackle road congestion is rather like a fat man loosening his belt to combat obesity.<sup>52</sup>

Carrying out a bypass operation isn't risk-free. De Groene Boog rapidly develops complications. *Wethouder* Langenberg admits to the media that it's not going to be altogether feasible to make it 'inaudible and odour-free'. 'Locals will smell the A13/A16 after all', says a headline in the *Algemeen Dagblad*, meaning that they'll have to breathe polluted air.

Electric cars won't solve this problem: they'll carry on producing pollution. Car brakes produce fine particulate matter and tyre abrasion releases large quantities of microplastics into the air, the sea, and our bodies.<sup>53</sup> That was something I hadn't realised when I wrote my first, enthusiastic pieces on mobility about the electric car as a solution to CO<sub>2</sub> emissions.

It's a painful discovery that repeatedly brings a frown to my face as I watch my two little boys bounding about on the trampoline on our little green island, our allotment surrounded by the sea of asphalt.



