



RESEARCH ROAD ATLAS

HOLLAND AVENUE

A strategy for collecting and analysing information relevant to the roaduser's experience.

Holland Avenue declares the intent to consider the motorway, not solely as a tool to go from A to B, but as an environment that is in itself a place to be.

The Dutch ministry of Transport, Public Works and Water Management seeks a vision of tomorrow's road based upon a road-user viewpoint. *Holland Avenue* takes the motorways linking the Randstad cities as its case study.

Holland Avenue was conceived, designed and produced by Mecanoo: Francine Houben, Magnus Weightman, Berthe Jongejan, Anthony Hoete and Joost Verlaan in conjunction with the Rijkswaterstaat, Wegen naar de Toekomst, Wegdek Pilots team: Marcel Koeleman and Ton Maagdenberg





IN (BRIEF)

A ROAD TO THE FUTURE

The Dutch Water and Highways Board (Rijkswaterstaat or RWS) seeks a vision of tomorrow's road based upon a 'behind-the-wheel' experience - a road user viewpoint. The vision should be aimed at the roaduser, including road designers, planners and decision makers.

INFRASTRUCTURE

The RWS recognised certain highway events might provide useful mechanisms through which driving experiences could be enhanced including:

- driving through agricultural / natural OR densely-built landscapes
- driving through tunnels / junctions
- driving past services and information points

OUT (HOLLAND AVENUE)

In response to the question posed by RWS, "what constitutes an interesting driving experience?" the Research Atlas introduces a strategy for collecting and analysing information relevant to the roaduser's experience. Information is categorised as belonging to either 'HARD INFO', the empirical and objective world of facts and figures, or 'SOFT INFO', the subjective recording of a moving roaduser's visual intake. This recording, done by video-ed observation, is notated and mapped to create a visual representation of the roaduser's experience which is then analysed through an observation and questioning process. This process informs the ensuing design section of the study.

The Design Atlas introduces and examines design terms, tools and strategies that relate to the roadusers' experience. A categorisation of three spatial conditions, road, verge and field, is made and the design potential of each is explored. Representation of the designs is made through roaduser perspectives and accompanying diagrams.

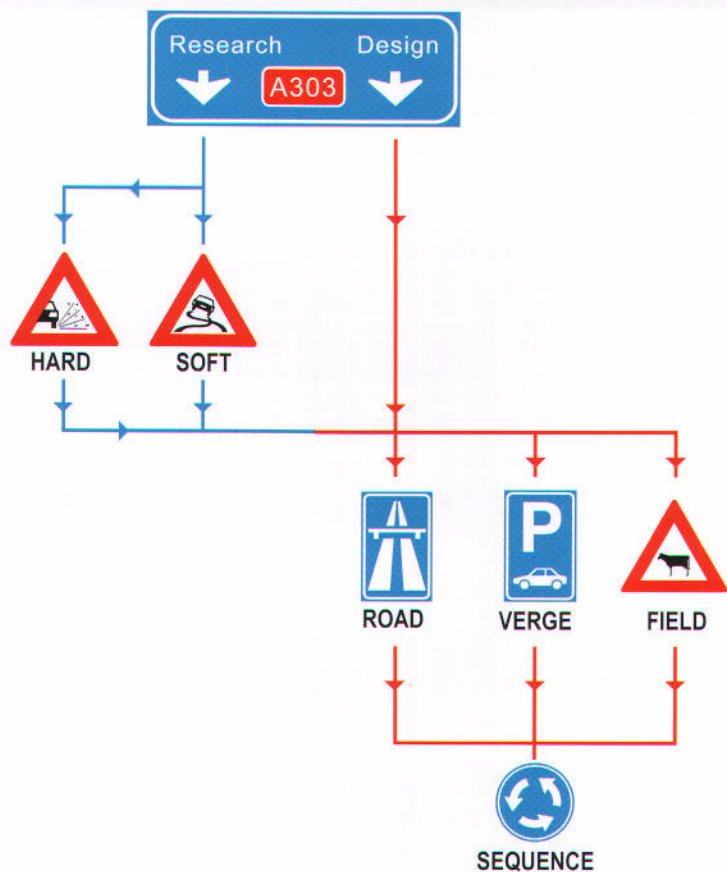
The term '*Holland Avenue*' declares the intent to consider the motorway, not solely as a tool to go from A to B, but as an environment that is in itself a place to be.

CASE STUDY

In order to understand road culture a case study was chosen. Known locally as the Rondje Randstad, this 'road' is unlike the conventional ring road which circumnavigates and serves a single metropole. The Rondje Randstad is perceived as a *metroloop* uniting six different roads (A2, A12, A20, A13, A4, A10) into one continuous loop road and thereby connecting the four largest Dutch cities to each other. The ring road as networker.

PROJECT TEAM

The road atlas forms part of the Mecanoo Architecten A303 project. The Road Atlas was conceived, designed and produced by the A303 project team: Francine Houben, Berthe Jongejan, Magnus Weightman, Anthony Hoete and Joost Verlaan in conjunction with the Rijkswaterstaat Wegen naar de Toekomst, Wegdek Pilots team: Marcel Koeleman and Ton Maagdenberg.



PROJECT PARAMETERS

A303

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Field of Study

Scale 1:1,000,000

Source: Europa Toeristische

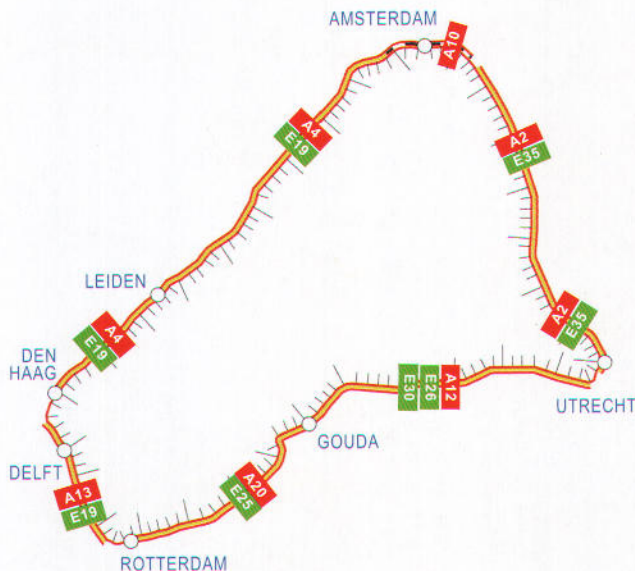
Wegenatlas, Michelin, 2001

ROAD

The field of study is the motorway system that connects the urban conglomeration of Amsterdam, Utrecht, Rotterdam and The Hague (from here on referred to by its native name Den Haag), otherwise known as the Randstad or, more recently, the Delta Metropole.

RING ROAD

This connection is made by several motorways; A13, A4, A10, A2, A12, A20. Although these are separate roads, thanks to their function as a connector of the Randstad they could be considered as a single 'ring road'. A giant roundabout.



Ringroad- Hardinfo

For demographic information on the urban conglomeration of the Randstad > (see Hardinfo - Demographics)

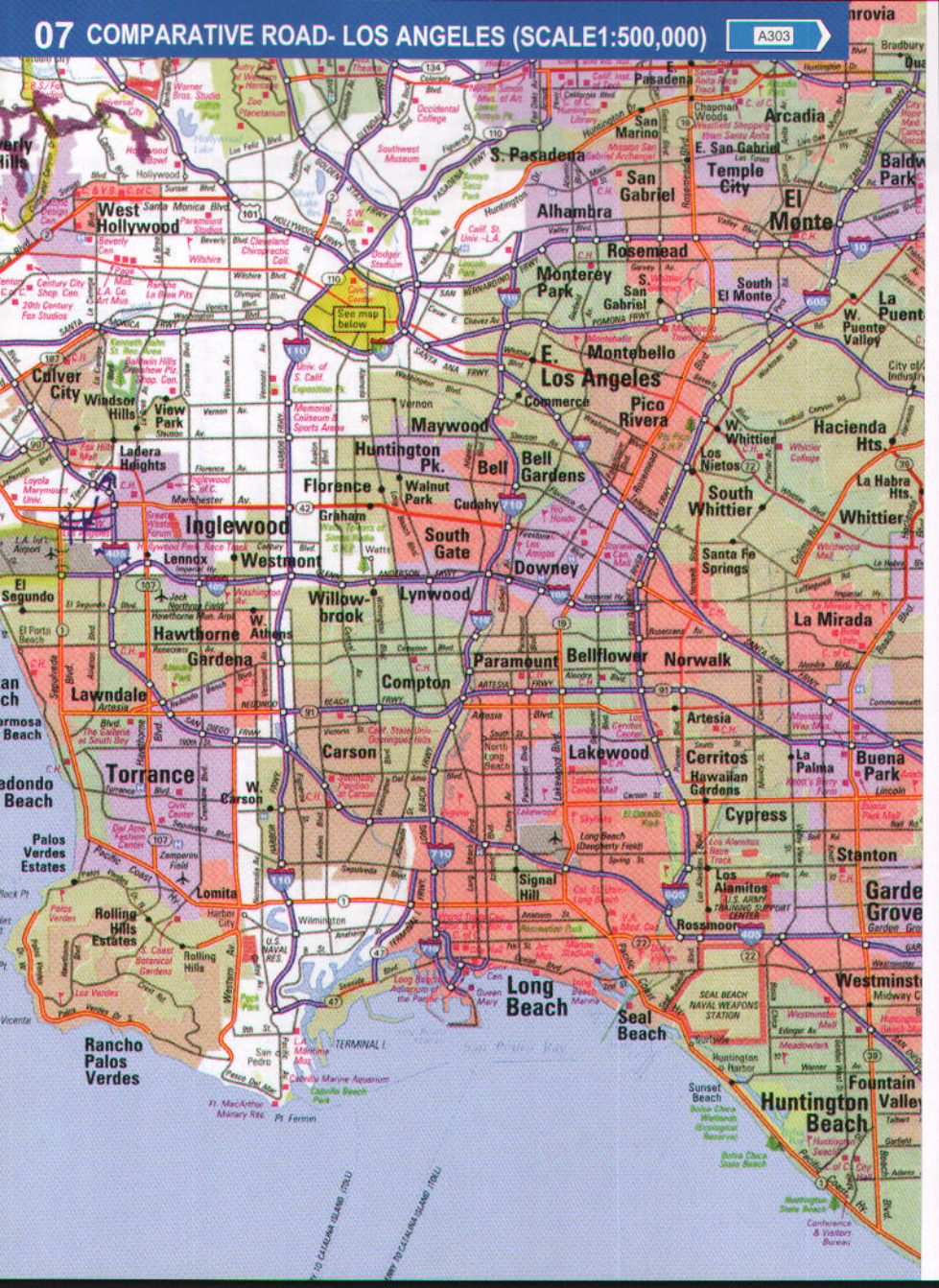
RING ROAD COMPARISONS

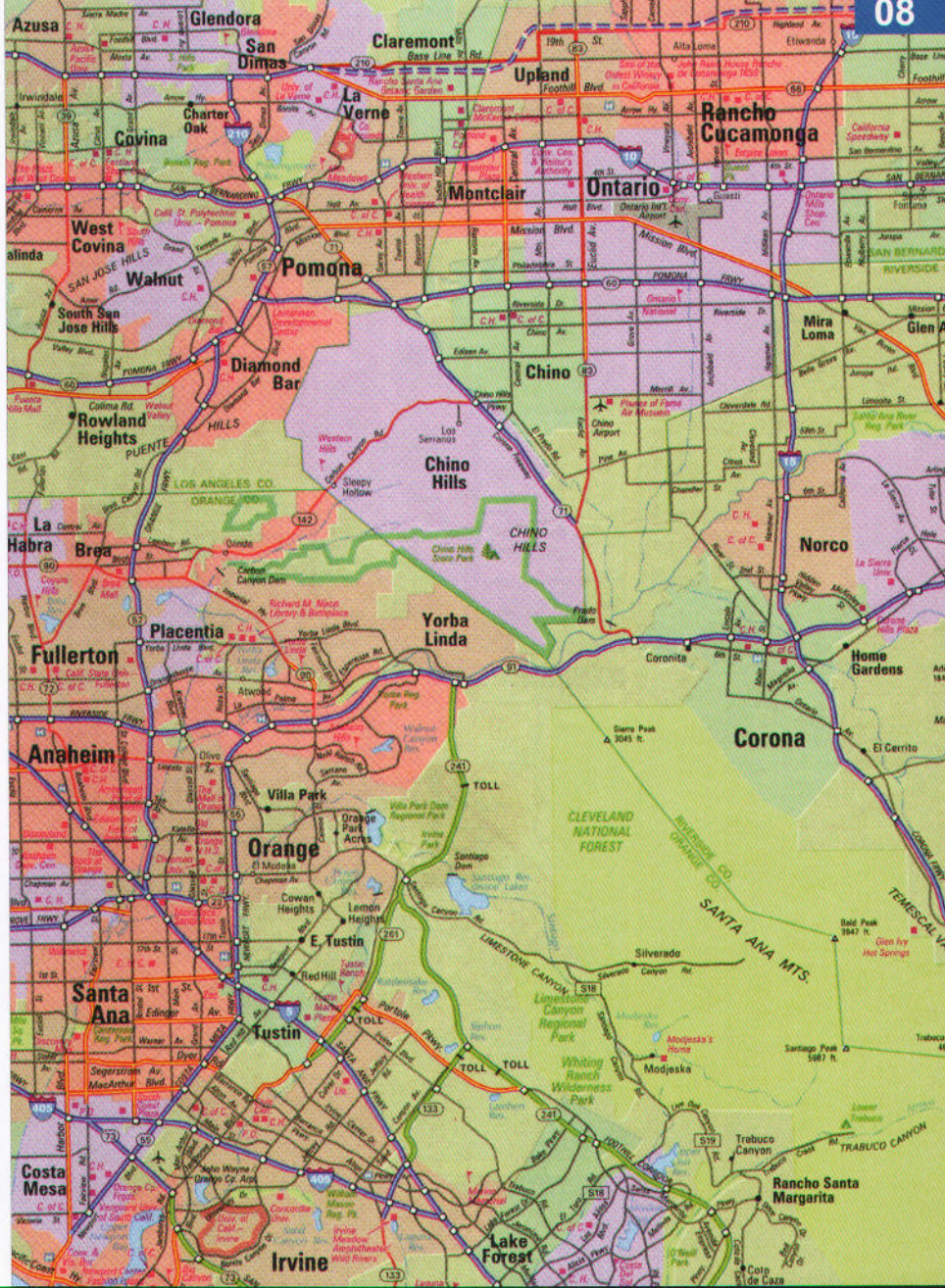
On the following pages a comparison at scale is made between the Randstad ring road and 3 other European ring roads; the 'Vlaamse Ruit' (or Flemish Quadrangle), London's M25 and Rome's Raccordo Anulare. It is apparent that the Randstad ring road bears closest likeness to the 'Vlaamse Ruit' which also connects a conglomeration of separate cities. London and Rome's ring roads, on the other hand, serve a single metropole. The role of the Randstad ring road is then conceived not simply as a device for circumnavigating or linking a metropole with its surroundings, but as an essential instigating element in the creation and functioning of a city network.

A road map of Los Angeles, USA, arguably the motorway city par excellence is also shown at the same scale. The motorways here operate over a far broader area and function as a more complex network rather than a single ring system.







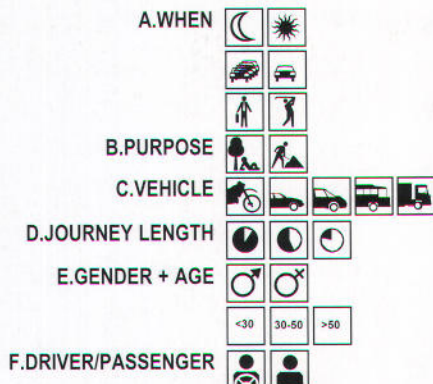


These images are to be found in the book *"From A to B - Tales of Modern Motoring"*; a study on driving culture in Britain. The people portrayed were also interviewed. Example captions are: family car (top left) - "When I say 'When are we there Dad', he says 'Oh, we'll be there in about five minutes', and then it takes us about an hour." company car (bottom right) - "I managed to persuade my boss to give me the BMW I commented on his own nice leather upholstery and said that if he really wanted to motivate his new employee, shouldn't this be something that he should be considering? And it worked."



ROADUSER FACTORS

There are a number of factors that contribute to defining a roaduser's profile. A scheme can be devised to illustrate the basic factors. The time of the journey (WHEN), the motive for travelling (PURPOSE), the type of vehicle (VEHICLE), the distance travelled and duration of the journey (JOURNEY LENGTH), the gender and age of the roaduser (GENDER + AGE) and whether he or she has a driving task (DRIVER/PASSENGER):



Different combinations of the factors results in a range in different roaduser types. Every journey is different (see overleaf).

ROADUSER OF THE FUTURE

As well as assessing the factors that contribute to today's roaduser it is also valuable in regard to design to address the emerging trends in tomorrow's roaduser.

Rising congestion levels in the future will lead to more time spent on the road (1). This combined with the development of the so-called 'attention economy' will lead to a growth in the need for facilities (A) within the car itself and (B) alongside or on the road itself.

Changes in the temporal pattern of work (2) and the rise of Information Technology will change the proportional balance of the purpose factor. At present commuter traffic dominates the roads, in the future there could be more recreational roadusers. The road will then acquire a more recreational dimension in the future.

More time on the road and rising recreational use suggest that the road will shift from being merely a tool to go from A to B, to being itself a place to be.

Factors - Hardinfo

It is possible to receive an impression of the actual situation in regard to some of these factors in Hardinfo. When (On the Road - speed), Purpose (On the Road - motive), Vehicle (Car - Number, Ownership), Journey Length (On the Road - distance, duration), Driver/Passenger (Car - Car vs. other modes of transport).

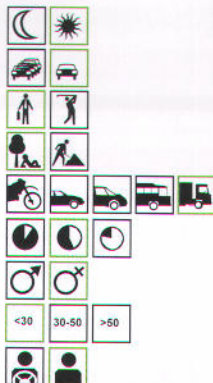
Future - Hardinfo

(1,2 see Hardinfo - On the Road - Speed; congestion)

Shown here are 6 (stereotypical) roadusers, each with a different profile according to their particular combination of the defining factors.

As can be seen by Tony it is possible for the same person to be a different type of roaduser with a different combination of factors. In this case the purpose of the journey (taxidriver and tourist) results in a different roaduser.

Each roaduser has different perception of the road (see opposite page).



Hilde the Hitcher



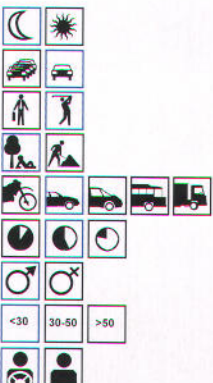
Dan the Dealer



Tony the Taxidriver



Tony the Tourist

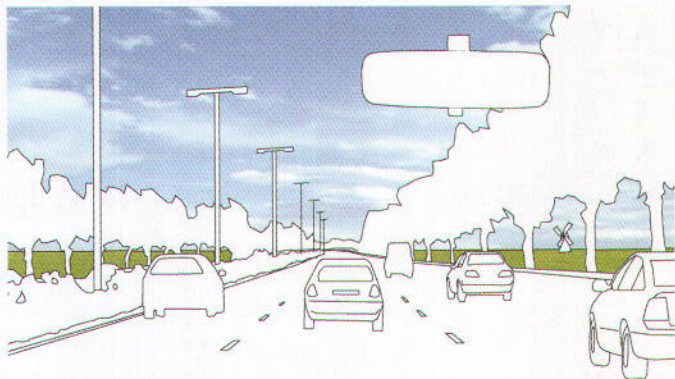


Peter the Petrolhead



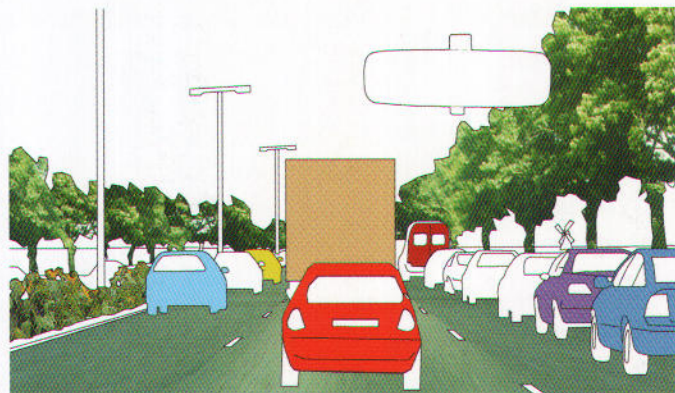
Sheila the Shopper





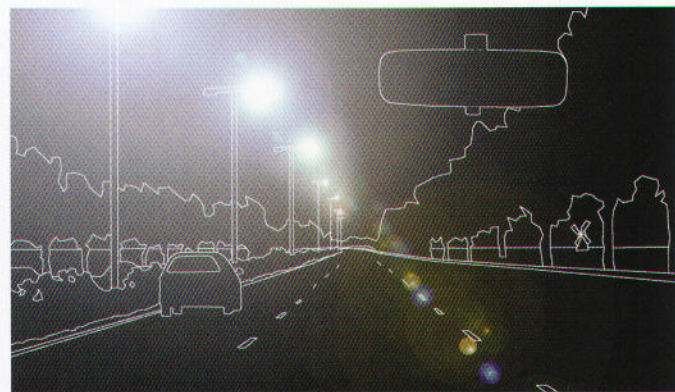
Hilde the Hitcher

Hilde is on holiday. The road conditions are of less importance, the surrounding landscape is of greater interest to her.



Tony the Taxidriver

Tony drives at peak time, he is stuck in a traffic jam. At a slower speed the immediate environment is perceived in greater detail.



Peter the Petrolhead

Peter is an insomniac, he likes to drive at night time. The lighting becomes a critical factor to his visual intake, only illuminated areas can be seen.

1. RING

The field of study is a system of motorways connecting the Randstad could be considered as one entity - a ring road. This road differs from other connector of different cities

2. EYES OF THE

Each roaduser varies according to a number of factors that define their and perceptions of the road.

3. THE ROAD SPACE

Emerging trends in road use suggest that the role of the road can change itself; a public space.

ROAD

As these motorways connect a single urban conglomeration the roads cumnavigational ring roads that serve one city, it is functions as a

ROADUSER

particular journey. Every journey is different and this can lead to different

AS A PUBLIC

from being simply a tool to go from A to B but to serve as a place to be in

HARD





THEMES

Demographics: spread, wealth.

Road: length, responsibility, regulations and policies.

Car: number and ownership, car vs other modes of transport.

On the Road: motive, distance, duration, speed, intensity, pollution, safety.

GOAL

To gather information that provides an insight on the roadusers and their functional and aesthetic experience of the field of study. This is not intended as a definitive library on roads but as a source that supplies stimulating data for the Soft Info and Design Atlas sections.

Trends are examined, where possible, by sourcing information on the past and present situations as well as estimates for the future.

STRUCTURE

The main text and graphics on the centre of the pages provides information according to each theme. At the edges of the pages interpretative statements and links to other sections of the atlas are given.



SPREAD

The Randstad is comprised of 4 major cities, Amsterdam, Den Haag, Rotterdam and Utrecht. The agglomeration of each is inhabited by a population of between 561,000 to 1,139,000, there are further smaller cities and towns situated within the Randstad, representing 42% of the 15.6million population of NL, on 17% of it's total land area, the population density is 960persons per km² within the Randstad and 490persons per km² over the whole of The Netherlands. (Ministerie van Justitie)

population figures for the four large cities, 2000

	x 1,000	Amsterdam	Rotterdam	Den Haag	Utrecht
inhabitants		737	595	444	262
agglomeration		1.139	1.106	711	561
working population		327	238	204	115

Source: Van de Wouden en de Bruijne, 2001 via: SCP

'Europe by night', satellite photograph

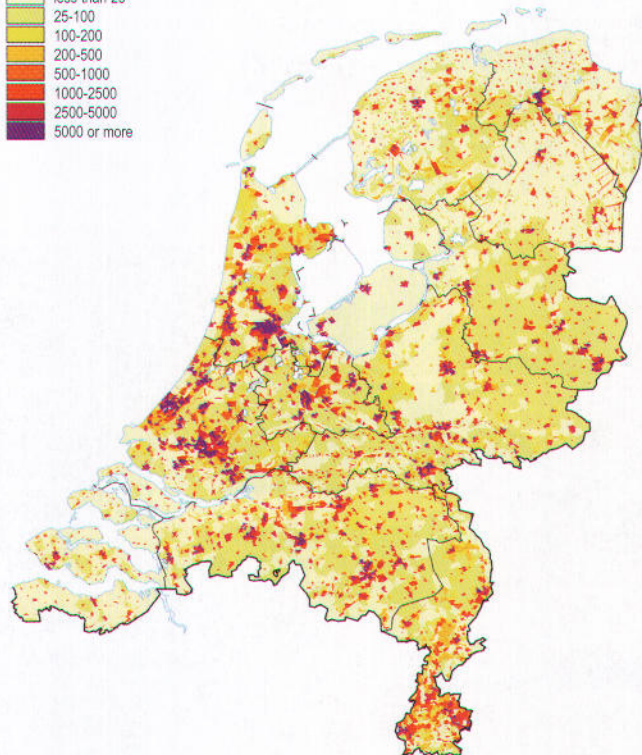
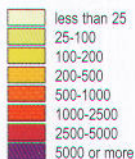
source: www.darsky.com



Spread

The Netherlands is the most densely populated country in Europe. Distances travelled within the country are relatively short.

population spread:
number of inhabitants per km² per neighbourhood



© Wn Atlas Productions

WEALTH

The average personal wealth of the population has more than tripled between 1975 and 2000, from a global perspective it is a rich population.

relative prosperity, BNP per head of the population, 1975-2000

in euro's	1975	1980	1985	1990	1995	2000
BNP per head	7,5	11,0	13,4	15,7	19,6	25,3

Source: CBS statline (SCP-bewerking) via: SCP

Spread

The polycentric urban shape of the Randstad indicates that a communication and mobility network are an absolute necessity for the Randstad to function as a singular whole.

Wealth

With a decreasing relative cost of cars it seems that almost every household can afford a car (see Hardinfo - Car - Number); perhaps we can conclude that a rich population is a mobile population.



LENGTH

The road network has been developed with plans from 1927 onwards, there has been a huge increase in the motorway network between 1950-1997

length of infrastructure (kilometres), 1950-1997

	1950	1960	1970	1980	1990	1997
Road-infrastructure	-	-	76.990	92.525	102.860	115.617
w.o. motorways	121	351	963	1.780	2.094	2.236
rail infrastructure	3.204	3.253	3.148	2.760	2.780	2.805

Source: CBS statline; AVV Website via SCP

Tableau der Wegen 1e klasse 1821, Rijkswegenplan 1927 - 1984

1821



1927



1938



1958



1976



1984



Source:
R. Scheele
Navigare necesse est;
de toekomst van vervoers-
systemen en hun mogelijke
weerslag vanuit historisch
perspectief gezien. Faculteit der
Ruimtelijke Wetenschappen
Universiteit Utrecht,
januari 1994

motorway expansion programme, MIT 2001



development of the motorway network

motorway built:

- before 1960
- 1960-1970
- 1970-1980
- 1980-2000

- Motorway under construction
- Connecting road



source: RWS

Length

The increase of the motorway network in the Netherlands has, in fact, been an upgrading of the existing provincial structure. Now, unlike in neighbouring Belgium there are no alternative provincial roads. (see *Field of Study - Ringroad comparisons*) As a result, the increase of the motorway network has not only strengthened the national and international infrastructure, but also facilitated shorter, local journeys. (see *Hardinfo - On the Road - Distance*) (see *Road - Form*)



Length

The decrease in development suggests stabilisation of the network. It also corresponds to present and future policies, whereby fewer roads will be added but rather the existing motorways may be expanded or re-organised. (see Responsibility, Regulations, Policies) (see Road - Form)

LENGTH

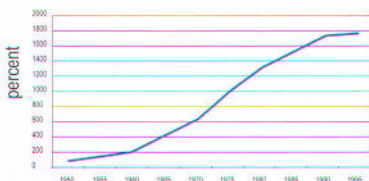
Although there has been an increase in the motorway network length, the development has levelled out since 1985.

development of the length of road structure in kilometres



source: CBS / NS

motorway network length, 1950-2000



source: Van den Brink

RESPONSIBILITY, REGULATIONS, POLICIES

Responsibility

The motorway system is the responsibility of a single organisation, the RWS. The ownership boundary of the RWS extends, in principle, to the far side of the run-off water ditch that runs parallel to all motorways in the Randstad. The RWS are responsible for both the maintenance and design of the motorways.

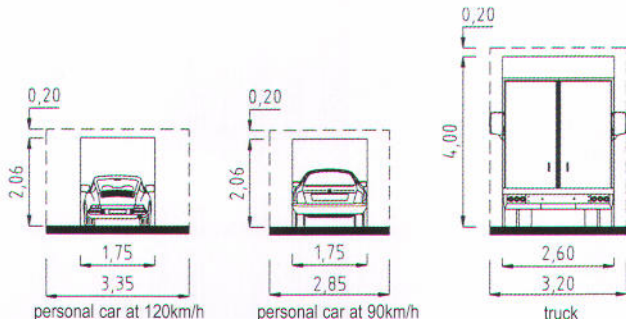
Cost

An average stretch of motorway (2 lanes in both directions) costs approximately 1million Euros per km (Source: RWS - Ton Maagdenberg). This comes to approximately 1000Euros per m²; which is roughly the cost of a standard public building in the Netherlands (source: Henk Döll, Mecanoo Architecten)

Regulations + Policies

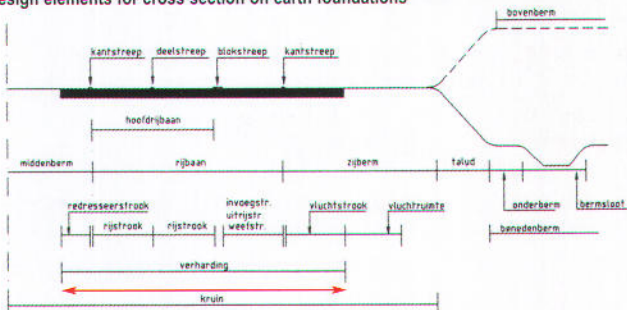
Specific regulations and policies in regard to the motorway itself and its effect on the surrounding area are enforced according to road type, the traffic that uses it and the physical and programmatic conditions of the context. (for example: signage regulations, sound pollution policy, servicestation placing, etc). (ROA-AVV, RWS, VROM, RIVM)

profiles of minimum space,
according to vehicle type and speed



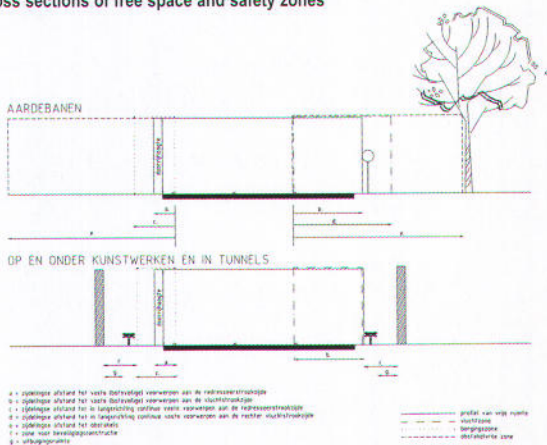
source: ROA

design elements for cross section on earth foundations



source: ROA

cross sections of free space and safety zones



source: ROA

Future policies

In anticipation of the development of personal transport from 2001-2020 the NVVP (National Traffic and Transport Plan) has compiled a number of possible future policies.

1. Adding lanes to existing network
2. Optimising of existing road network - eg. speed control, digital boards, traffic info
3. Paid lanes - road slots
4. Varying 'fixed car tax'
5. Congestion levy's
6. Improvement of public transport
7. Mix of the above

source: NVVP Beleidsopties verkend, deel 1

Regs + policies

The regulations and policies define, to a large extent, the physical and aesthetic attributes of the motorway. They can also define the relationship between the motorway and its context.

By questioning these regulations and policies and devising new ways to work with them there is the potential to alter the aesthetic and physical make up of the motorway. (see, in particular, *Verge*)

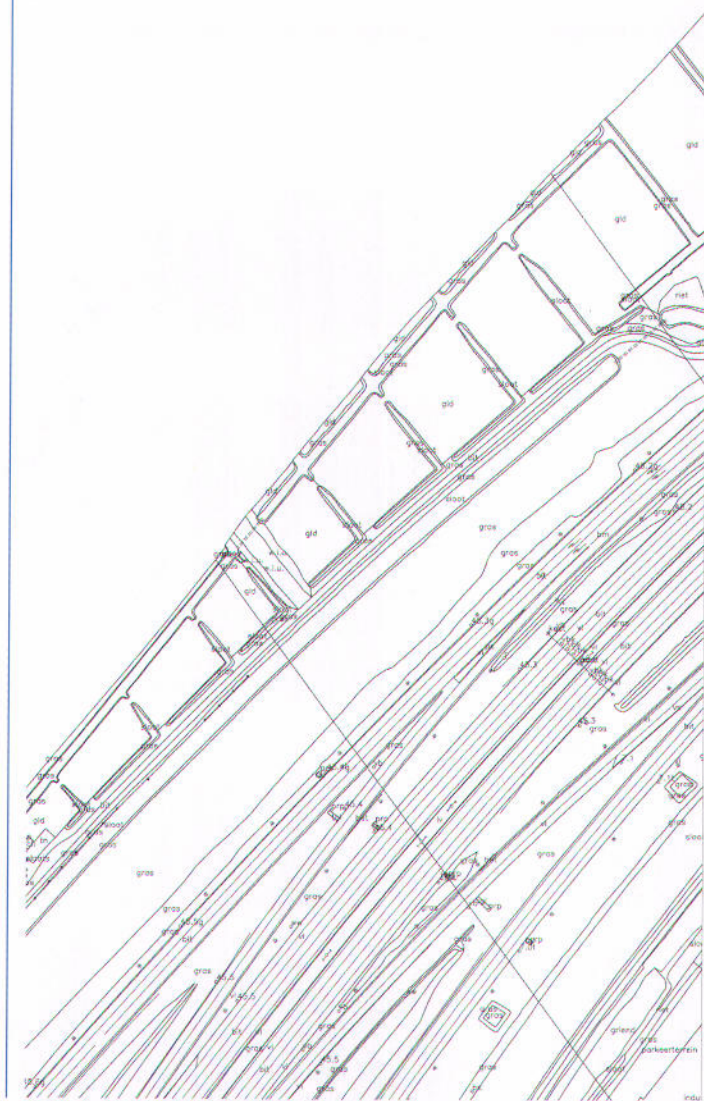
Future policies

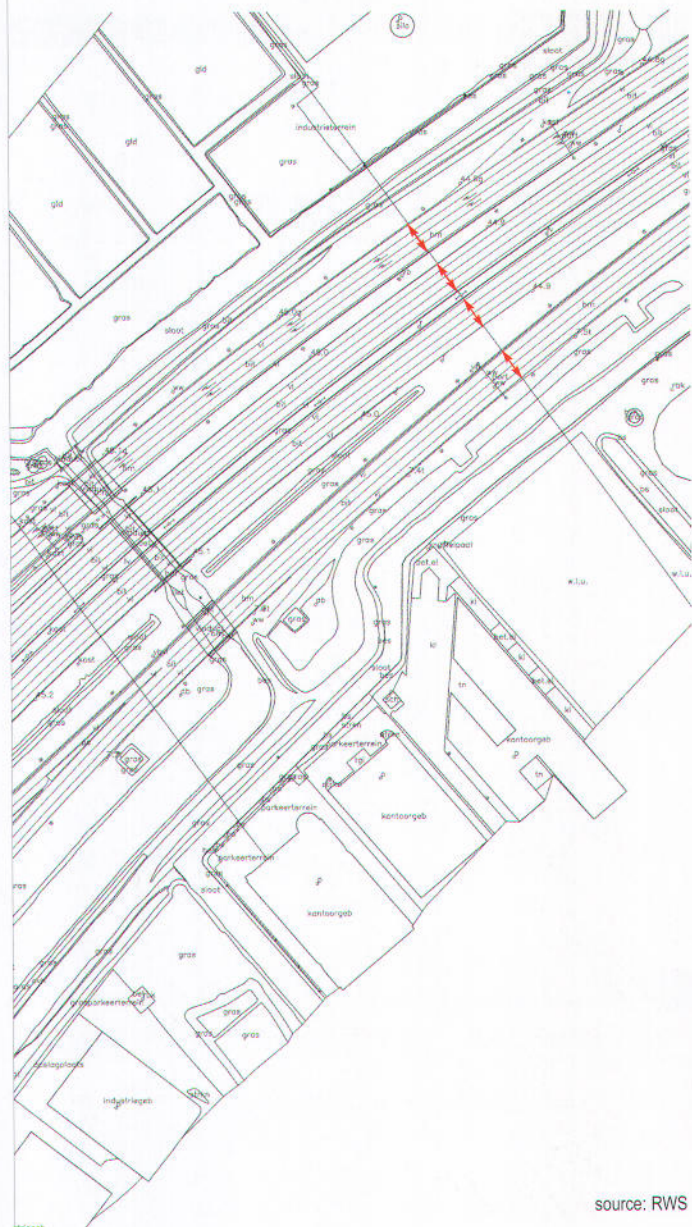
The policies anticipate an increase in congestion. (see *Road - Surface - paid lanes, Road - Form*)



RESPONSIBILITY, REGULATIONS, POLICIES

AutoCAD drawing, definitive design A4





Regs + policies

The regulations and policies are not merely guidelines; they are adhered to up until the final product. The road designers' skill is to apply these principals to a real context. For example a mistake made in the design of the alignment of the road can lead to "ghost jams" where congestion can occur because of disrupted visibility lines (RWS).

source: RWS



NUMBER, OWNERSHIP

Number

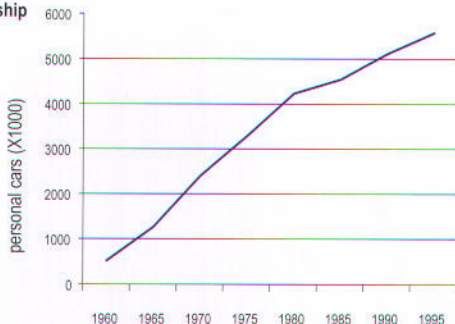
There has been a huge increase in the absolute number of cars, as well as the number of cars per person and per household; there is now almost one car per household in the Netherlands. (SCP)

car ownership 1990-2001

	1990	1995	2000	2001
Total cars (x 1,000)	5,118	5,581	6,343	6,539
cars per 1,000 inhabitants	344	362	400	409
cars per 1,000 households	844	856	930	949

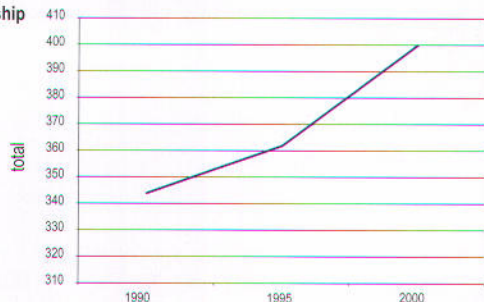
Source: CBS statline (SCP-bewerking) via: SCP

personal car ownership



source: CBS

personal car ownership per inhabitant



source: CBS

Cost of car ownership

The cost of owning a car is relatively cheaper than it was 20 years ago. The fuel prices have gone up, but relativated to inflation they are at the same level as 1980. Cars have become more fuel efficient and there has been a trend towards diesel and cheaper fuel sorts; resulting in a lower fuel cost per kilometre than in 1980. Cars have become relatively more expensive, however cars are also more durable; a longer life reduces the cost per year. (SCP)

costs of car ownership and use

	1995	1996	1997	1998	1999	2000	2001
Price-index new cars 1995=100	100	98	98	98	99	101	103
Price-index used private-transport 1995=100	100	104	108	107	112	126	128
Price-index combustible fuels 1995=100	100	106	112	110	116	136	135

Source: CBS statline (SCP-bewerking) via: SCP

Number

The car has become a universal form of transport. Car culture is now a part of the Netherlands. It is legitimate to consider the roads as genuine public spaces.
(see Road - Programme)

Cost

The reduction in the cost of owning a car, to some extent, explain the growing popularity of cars.

car age - distribution

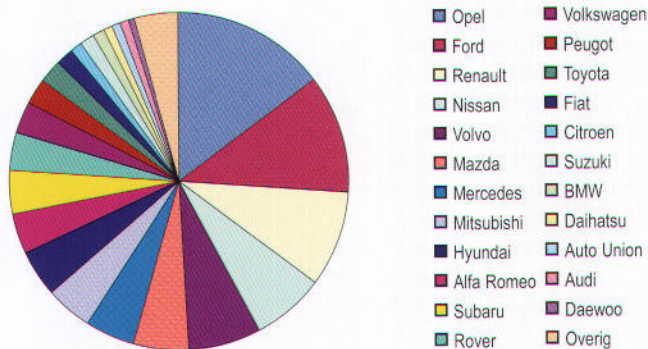


source: CBS statline

Car brands

The most common cars found on Dutch motorways are Opels, Volkswagens and Fords. However in 2001 the most sold cars were Peugeots (CBS, via Volkskrant).

most common brands



source: CBS Statline





Proportion

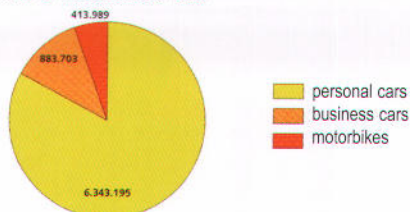
The personal car user represents the majority of road-users. (see Field of Study - Roaduser)

NUMBER, OWNERSHIP

Proportion of vehicle types on the road

Personal cars form about 80% of total traffic on the motorway (NVVP)

Number of motorvehicles 1999

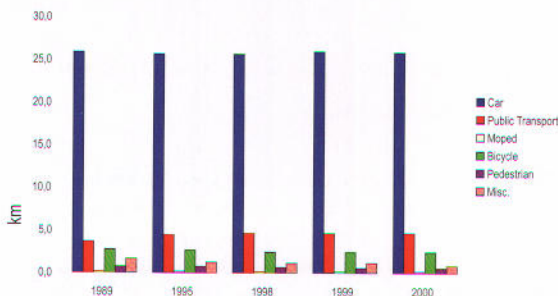


source: NVVP

CAR vs. OTHER MODES OF TRANSPORT

The distance travelled per person per day by car is 26km, whereas by public transport the distance is only 4.5km, in 2000.

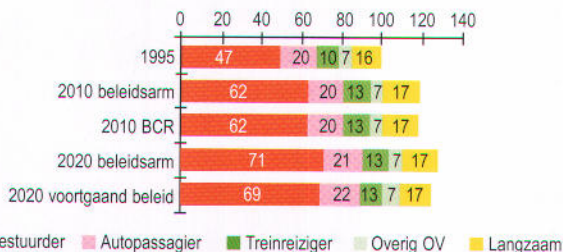
travel distance (km/p/d)



source: CBS statistisch jaarboek 2002

An estimate has been made for mobility per transport type in the future. With different projected economic scenarios the car will increase its share in mobility by 2020, the train's share will however decrease.

extent of mobility per transport type (per policy scenario)



source: NVVP beleidsopties verkend, deel 1

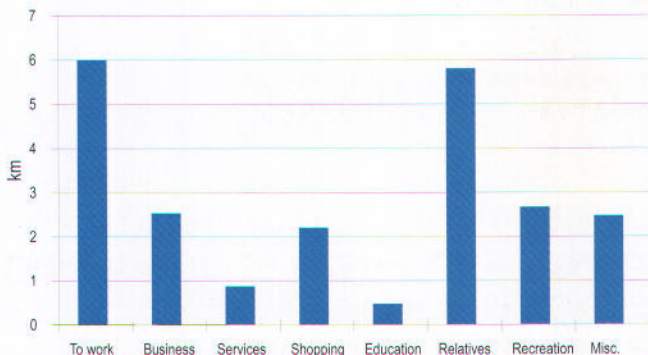
Mode

Even in the Netherlands, with an advanced public transport system, the car remains by a huge margin, the most used form of transport. And, according to predictions, the car will increase its share of mobility in the future.



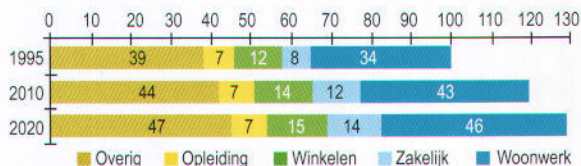
MOTIVE

Commuting and visiting relatives are the most common reasons for travelling by car.
travel motive



source: CBS

mobility in 2010 and 2020 (with policy-free scenario) per journey motive



source: NVVP beleidsopties verkend, deel 1

DISTANCE

More than 50% of the car movement from out the major cities in the Randstad has an action radius of less than 5km. (SCP)

action radius of car movement from out the 4 major cities, 2000 (percentage)

	Amsterdam	Den Haag	Rotterdam
0-1 km	20	21	19
1-2.5 km	22	24	22
2.5-5 km	14	16	12
5-10 km	15	17	16
10-20 km	12	10	15
20 - 30 km	5	4	7
30 km or more	12	8	9
total	100	100	100

Source: OVG 2000 (berekeningen SCP) via: SCP

Motive

At present commuting dominates the travel motives. With a 'policy-free' future this will also grow. However there is also a trend that leisure will become economically more important. This will also be seen in the mobility motives (RWS; Marcel Koeleman). (see Road - Programme)

Distance

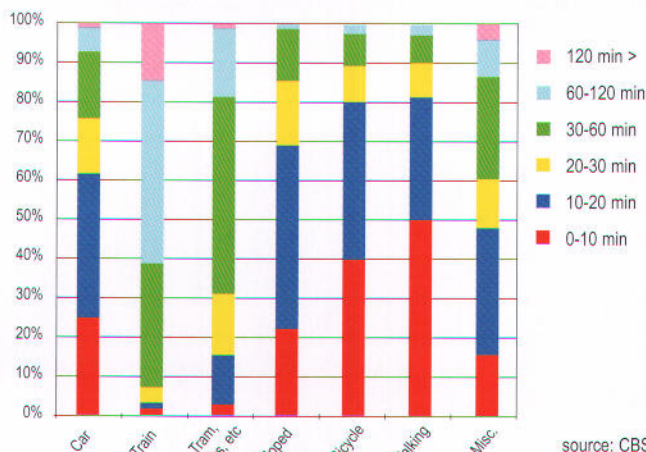
The motorway is also used for local functions. (see Road - Form)



DURATION

60% of all car journeys are less than 20 minutes, whereas the train is 80% used for journeys of 30-120 minutes.

travel duration per vehicle



Duration

Regarding journey duration the car is more comparable to mopeds and bicycles than trains. It is mostly used for short duration journeys.

SPEED

Congestion

The average speed is greatly affected by congestion; this peaks on week days between 07:30-09:00 and 15:30-17:30, there are also variations over the working week, the weekends are relatively congestion free (SCP), there are also seasonal variations - the congestion peaks fall away in July and August (typical holiday months), the largest cause of congestion is commuter traffic. According to predictions congestion will increase in the future, however the temporal pattern will change; the congestion will be spread more evenly.

temporal concentration of traffic

	1975	1980	1985	1990	1995	2000
Morning rush hour (0-12 u)	7.45	7.45	7.45	7.45	7.45	7.45
% commuter traffic in morning rush hour (7.15 - 8.15)	61	55	57	51	53	47
Afternoon rush hour (12-24 u)	17.00	17.00	17.00	17.00	17.00	17.00
% commuter traffic in afternoon rush hour (16.30-17.30 u)	36	39	39	37	34	39

Source: Breedveld e.a. 2002 via:SCP

recorded average traffic speeds, 21.10.2001



09.22



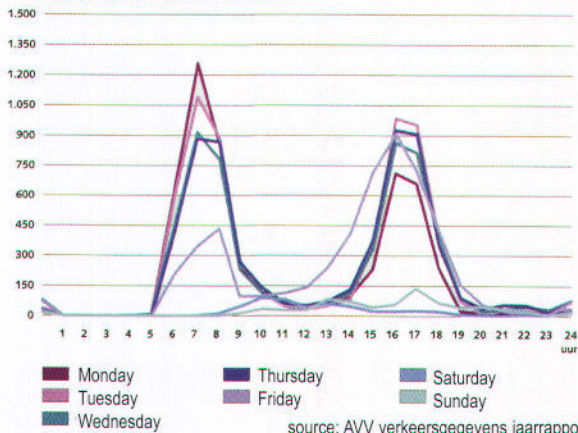
10.34



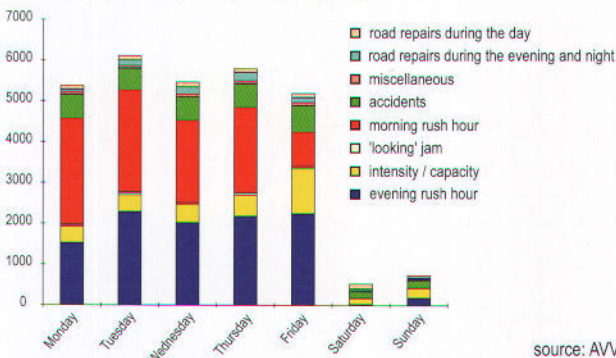
18.00

source: ANWB website

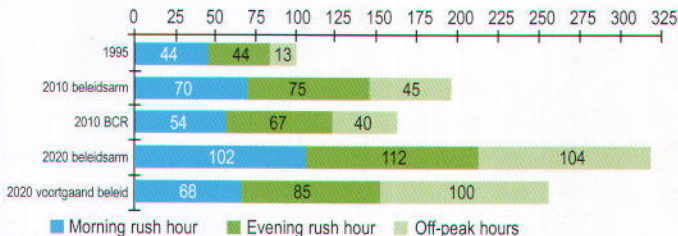
total traffic jams, with respective hour, 1999



total traffic jams, according to day and cause, 1999



congestion on the principal road network (lost transport hours), per policy scenario, 2010, 2020



Speed congestion

The present situation is a very clear indicator of the work culture in the Netherlands. It is also evident that, in regards to time, there is an inefficient use of the motorway system.

The temporal pattern will change to a more even spread in the future, perhaps due to changing working patterns and travel motives. Congestion as a whole will increase up to three fold. (see Road - Surface, Road - Form, Verge - Identify)

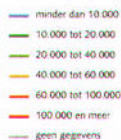


INTENSITY

At present the Randstad motorways are the most intense in the Netherlands. However the development of the intensity over the 1998-99 period was greater in other parts of the country, such as on the A32 to Leeuwarden.

traffic intensity, The Netherlands 1999

average number of vehicles per (work)day



development of traffic intensity, The Netherlands 1999-1998

increase and decrease of total average number of vehicles on workdays in percent 1999 tov 1998



Intensity

The numbers (more than 100,000 vehicles per day on parts of the Randstad motorways) reveal the heavy use of the motorways. The development of intensity shows that the broader network will also receive heavier usage in the future. There will be a move from 'network city' to 'network country'.

source: AVV verkeersgegevens
jaarrapport 1999

POLLUTION

Due to the increase in the number of cars over the years pollution has also risen significantly. CO₂ emissions are not the only pollutant that cars cause, sound, amongst other irritants, is another effect; almost one third of the Dutch population stated that they are annoyed by road noise (CBS Statline). (SCP)

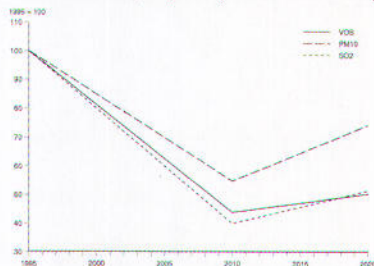
However there is good news; pollution will drop in the future. This will be essentially a result of new policies enforced by the European Union. Cars will become more environmentally friendly and road policies such as reduced designated speeds will be implemented. (NRC Handelsblad)

personal cars emissions on the motorways, 1980-2000

min. kg.	CO ₂	CO	VOS	NO _x	PM ₁₀	SO ₂	N ₂ O
1980	3.540	251	31	71	1,2	0,9	0,1
1985	3.962	218	30	73	1,4	1,1	0,1
1990	4.931	169	25	77	1,6	1,5	0,2
1995	6.159	85	17	60	1,3	1,4	0,4
2000	7.215	67	9	39	1,0	0,6	0,4

Source: CBS Statline via: SCP

emissions of VOS, SO₂, PM₁₀, with a 'Global Competition' - scenario, 1995-2020

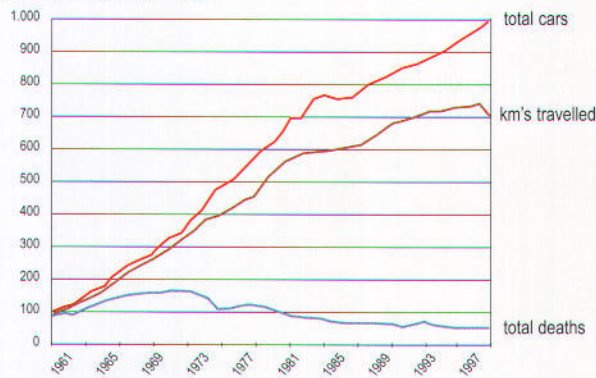


source: RIVM (1997a), via: CPB

SAFETY

Roads have become safer. The 'peak' year for fatal traffic accidents was 1972. In 2000 the total was a third the number. (SCP)

number of fatal traffic accidents related to the total number of cars and kilometres travelled (index 1961 = 100)



source: AVV 2002 (via: SCP)

Pollution

If pollution policies are not continued after 2010 emissions will again rise. The relationship between legislation and pollution is clearly close.

If emissions are to be reduced the chance to inhabit the space close to the motorway will improve. (see *Verge - Purge*)

Safety

One of the main reasons that the number of accidents has decreased is that, with the development of the motorway network, there has been a shift of traffic numbers from the local roads to the relatively safer motorways (SCP, citaat: Van Wee, 2000). (see *Hardinfo - Road - Length, On the Road - Distance*) (see *Road - Form*)

1. NETWORK

A polycentric spread of the Randstad population means that mobility is a network is now spreading out to other parts of the country

2. CAR

Extensive lengthening and improvement of the motorway network over the per person and per household) has created a predominance of car culture

3. THE LOCAL

The historic development of Dutch motorways in relation to provincial junctions, and perhaps driver habit and safety considerations has lead to also inter-local connectors

4. REGULA- MOBILITY

The visual appearance and functionality of the Dutch motorway is motorway itself and it's effect on the surrounding area

5. PEAK

Defined work times affect the traffic intensity on the motorways, creating a commuter traffic dominates the motorways. Combined with new work the traffic will be expected to change in the following years, leading to a

COUNTRY

fundamental fact and necessity of the Randstad. The intensity of the

CULTURE

past 50 years and strong increases in the number of cars owned (absolute, in The Netherlands.

MOTORWAY

roads, the increase in the motorway network, a policy allowing local the motorway developing a role from being not only a long distance but

TIONS >

AESTHETICS

determined to a great extent by particular policies in regard to both the

TIME

very clear temporal pattern of traffic jams within the Randstad. At present policies and the economic ascendancy of recreation the temporal pattern of more evenly spread, yet still intense, distribution over the day.

SOFT





THEMES

Number of lanes,
Designated speed,
Interior access,
Service stations,
Perceived crossings
(super + sub), Depth of
field, Programme,
Signage: Advertising,
Recognition, Landmarks.

GOAL

To obtain a clear recording (and not simply a speculative impression) of the road-users' visual experience of the field of study. To map the physical factors, both functional and aesthetic, that have an influence on the experience of the road-user. This mapping is not exhaustive but intended to create a platform for discussion for the design proposals.

STRUCTURE

The recording is made by filming a journey clockwise around the Randstad on the inner ring. Information from the film is notated according to each camera view; the raw data is then translated to readable and comparable maps.

Each map has a 'Key to Map' as a brief description, 'Key to Symbols' as legenda, 'Observations' as an objective description of the data and 'Statements' which are interpretative conclusions from the map. These are translated to 'Design Tasks' that mostly find responses in the Design Atlas.





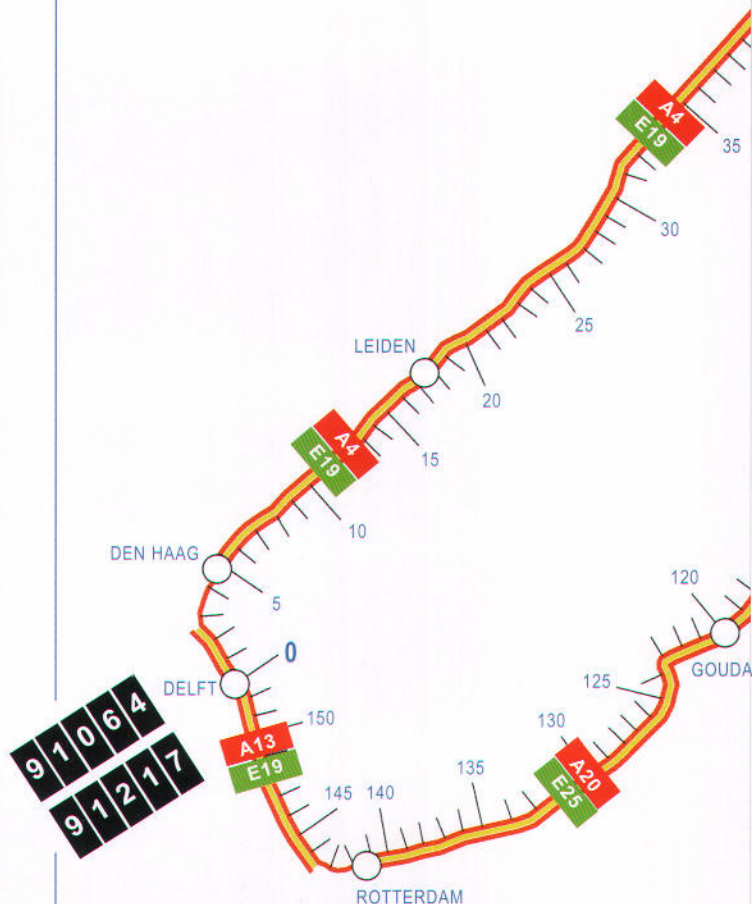




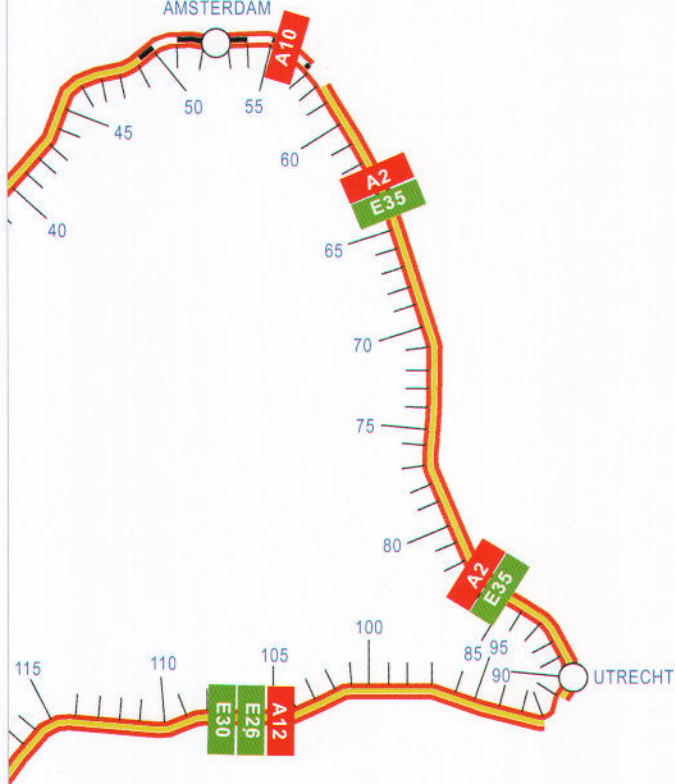


Key to map

Kilometres mark odometer distance - (distance travelled by car) - this may differ from 'real' map distance (due to changing lanes, junctions etc).



AMSTERDAM



Key to symbols

Traffic sign classification

International and national road network or connecting road

Motorway

Motorway with rail line

Motorway numbering for Netherlands/Belgium

A12

Europaroutes numbering

E26

Odometer classification

kilometers travelled according to vehicle odometer

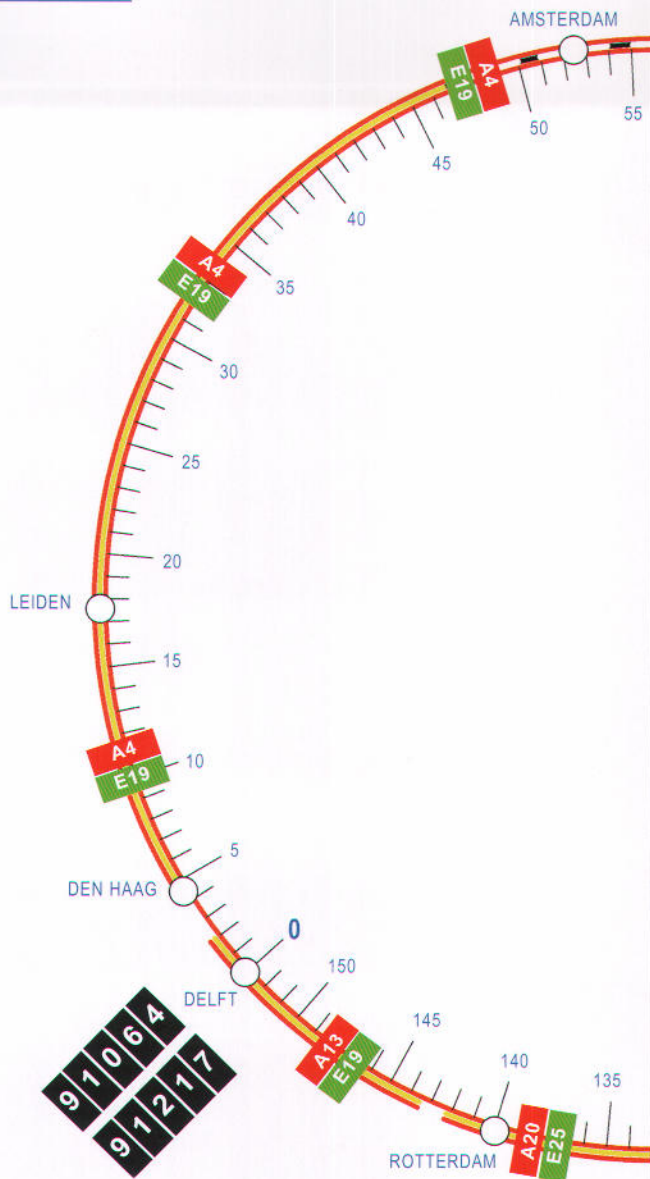
90

UTRECHT



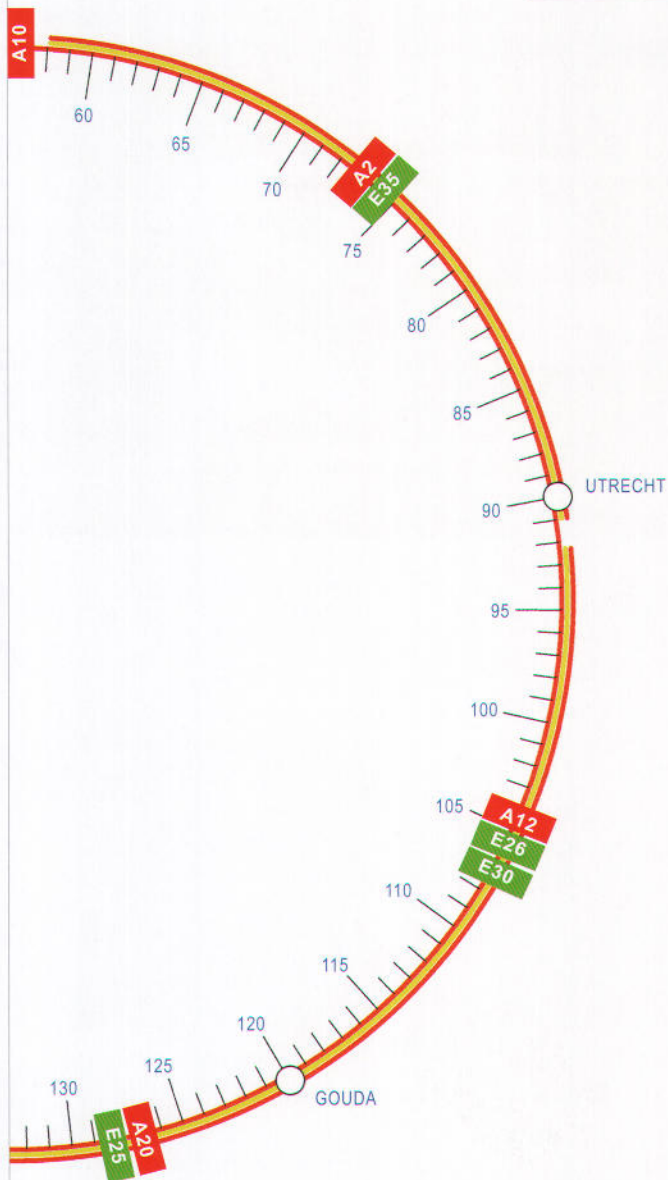
Key to map

The 'Rondje Randstad' route is abstracted into a perfect circle at the same scale.



SCALE 1:200000

10MM=2KM



Key to symbols

Traffic sign classification

International and national road network or connecting road

Motorway

Motorway with rail line

Motorway numbering for Netherlands/Belgium

A12

Europaroutes numbering

E26

Odometer classification

kilometers travelled according to vehicle odometer

90

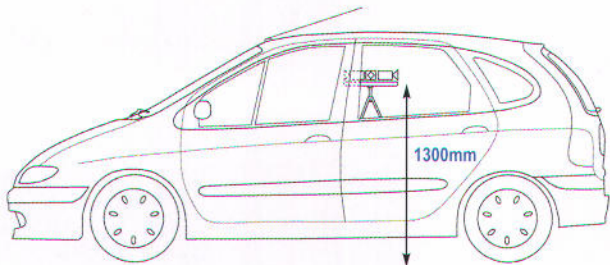
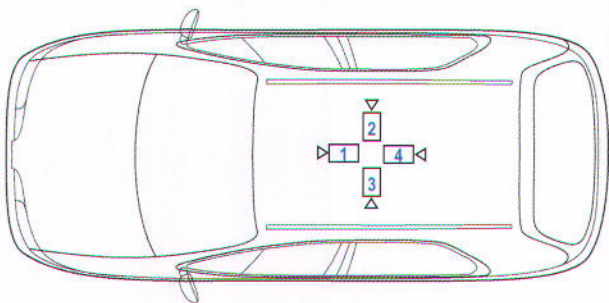


The "Road Movie" was recorded on 12 July 2001 using four JVC100E Digital Camcorders taping continuously onto eight 60 minute cassettes. Two cassettes were required per camera as the journey length for one loop is approximately 1 hour 45 minutes if traveling at an average of 90kph / maximum 120 kph. The cassettes and batteries were changed after 55 minutes. The four cameras were installed in a 2.0L Renault Megane.

During the journey a vocal record was kept marking every kilometer travelled by the vehicle and orientation points. These were later used for the mapping out.



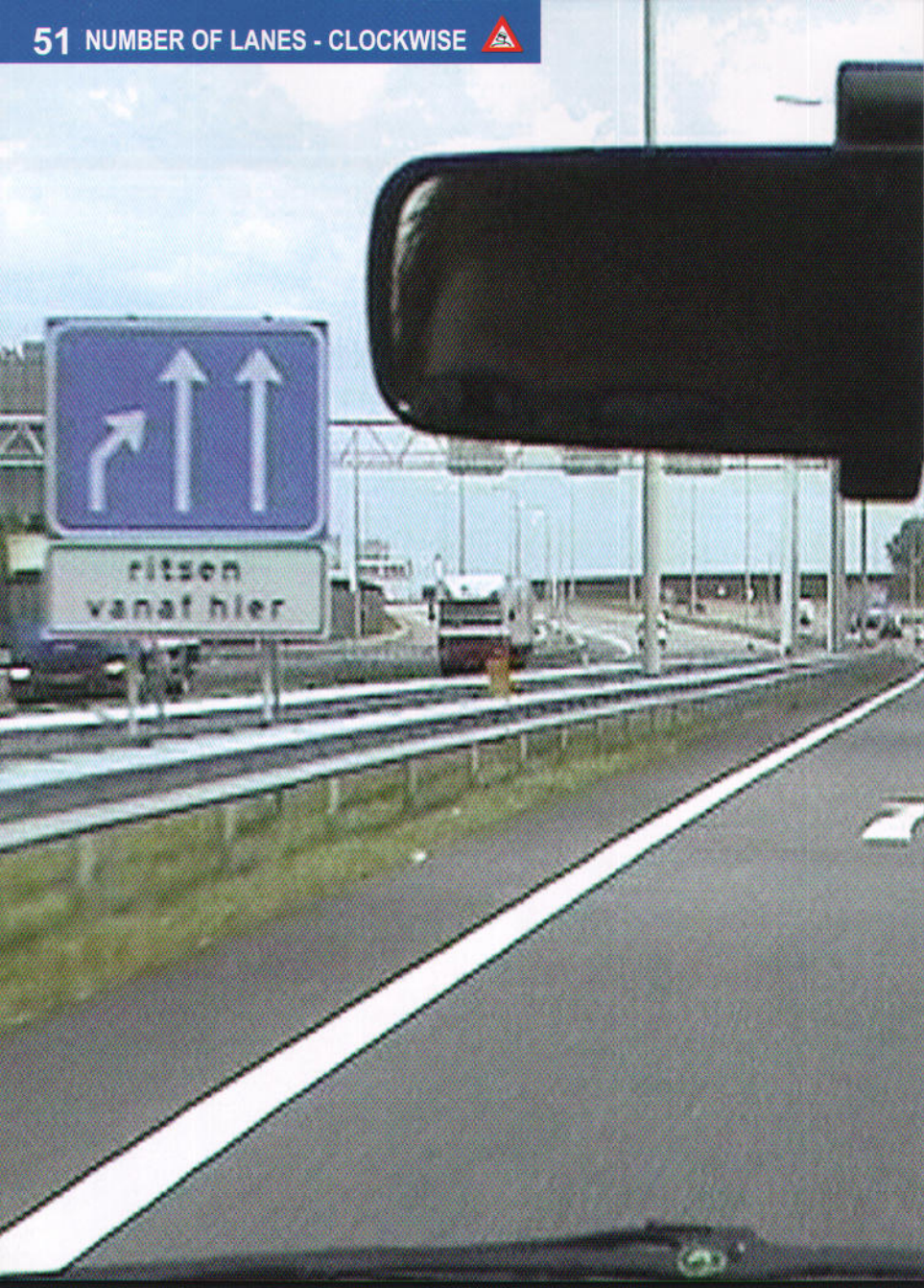
CONE OF VISION = 35°











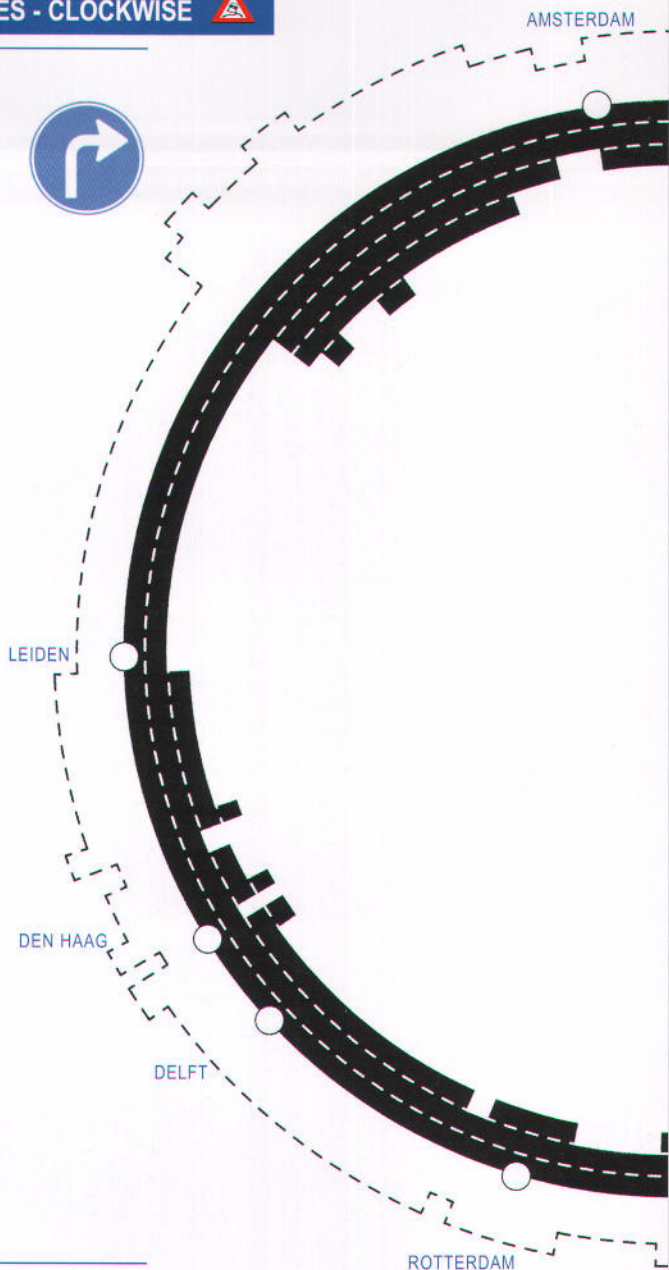




Key to map

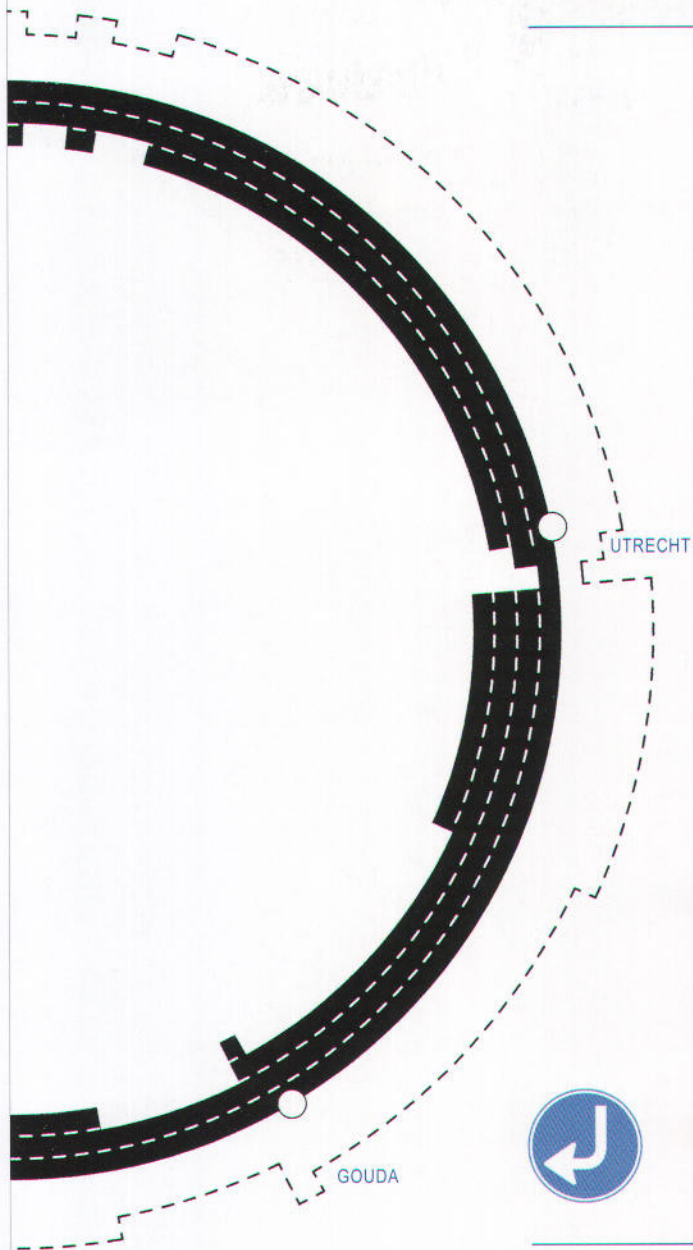
Method of mapping

Number of lanes dedicated to the road counted on inner ring, travelling 'clockwise' (therefore excludes lanes dedicated to junctions on and off). An outer ring has been dotted but is not definitive.



Observations

For the most part - 3 lanes,
except 2 lanes
Leiden to Nieuw Vennep
Gouda to Rotterdam
except 4 lanes
Nieuw Vennep to Schiphol
Utrecht to Woerden



Statements

A greater number of lanes can accommodate a higher volume of traffic.
The absolute numbers of cars in the Netherlands has been increasing over recent years.
(see Hardinfo - car)

Design Tasks

The number of lanes and their spatial organisation in relation to a rising volume of traffic.
(see Road - Form)

55 DESIGNATED SPEED

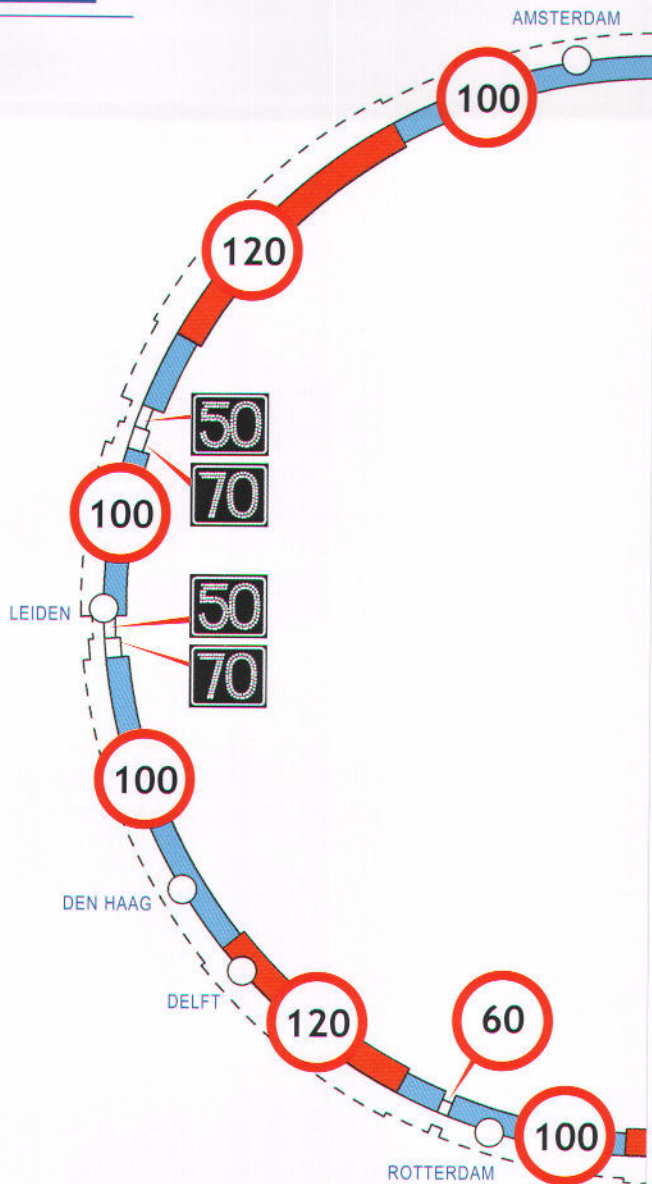






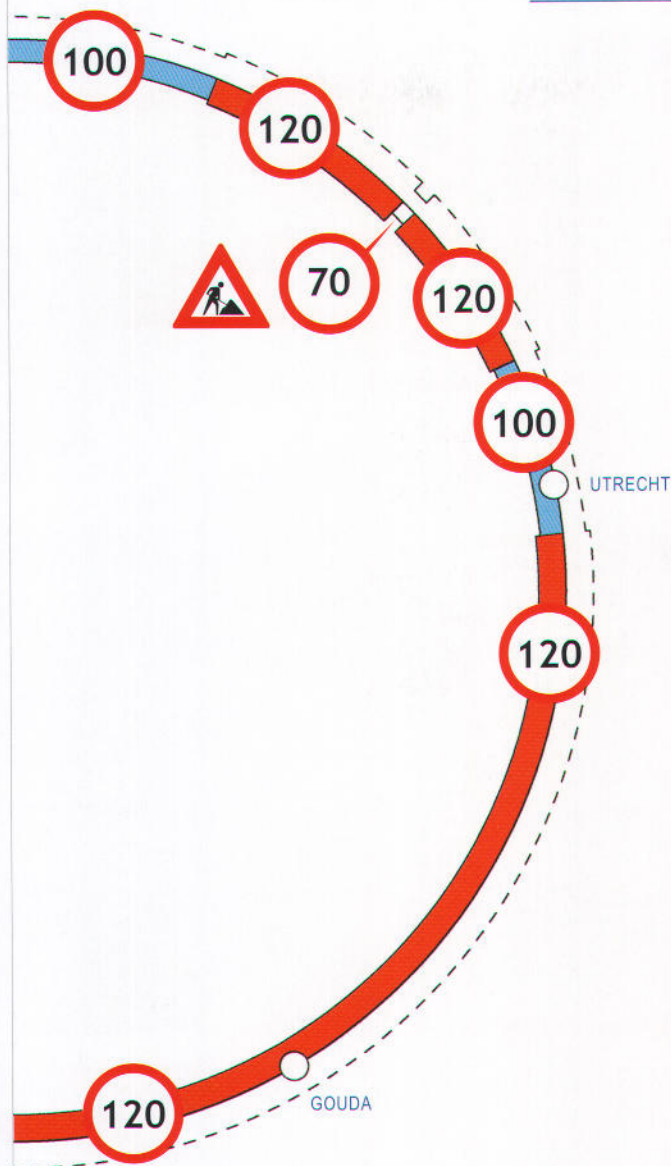
Key to map

The map shows the legal speed, the map does not take into account the actual speed of the car. The information is taken from the signs positioned either next to or above (temporary signs) the road.



Observations

For the most part the speed limit is 120km/h - The 100km/h restrictions seem to occur around the major cities



Key to symbols

Traffic sign classification
Maximum speed (km/h)



Maximum speed on an
electronic signalboard
(temporary restriction)



Roadworks in progress



Statements

The relation between changing designated speeds and major cities suggests that a speed policy that responds to the environment and that traffic that is generated by it is in place.
(see Hardinfo - Road - Responsibility, Regulations, Policies)

As well as the variation of the designated speed, it is also known that the actual speed of the traffic varies with each day. This has a consequence for the roadusers' space/time relationship. At slower speeds the immediate surroundings increase in importance as the cone of vision broadens, and there is more time for observing the surroundings.
(see Hardinfo - On the Road - Speed)

Design Tasks

The spatial organisation of speed; separating and merging different speeds.
(see Road - Form)

The design of the surroundings at different speeds.
(see Verge - Soundcreens)

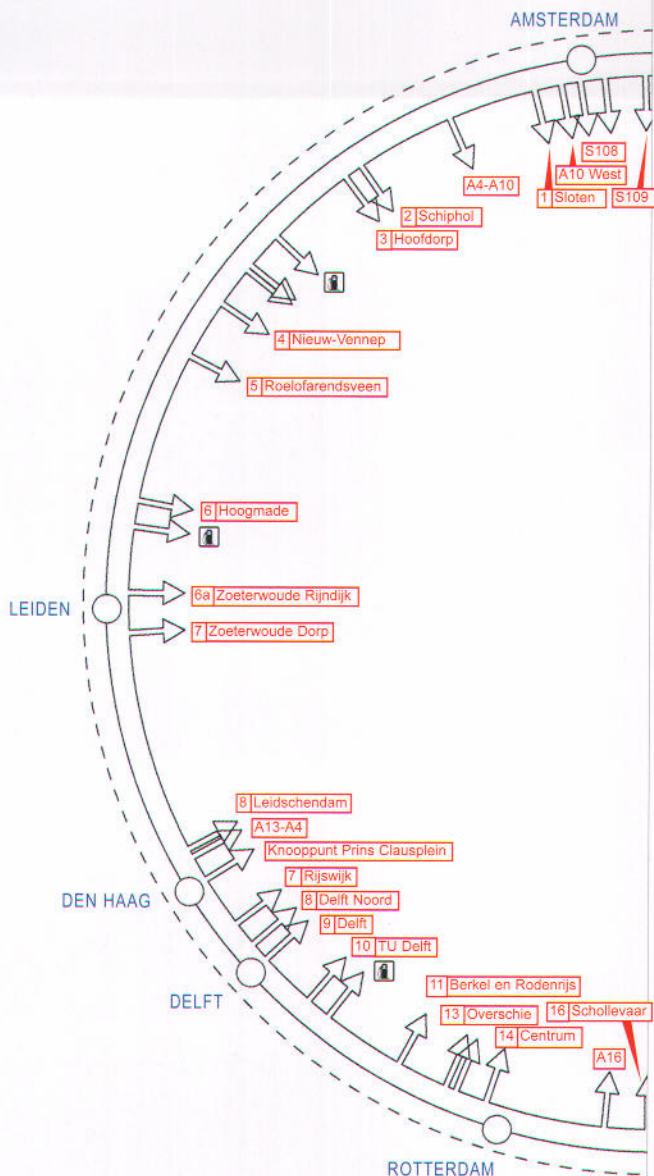






Key to map

Exits from the 'rondje randstad', shown at the point of the exit itself. The type and the name of the exit is given.

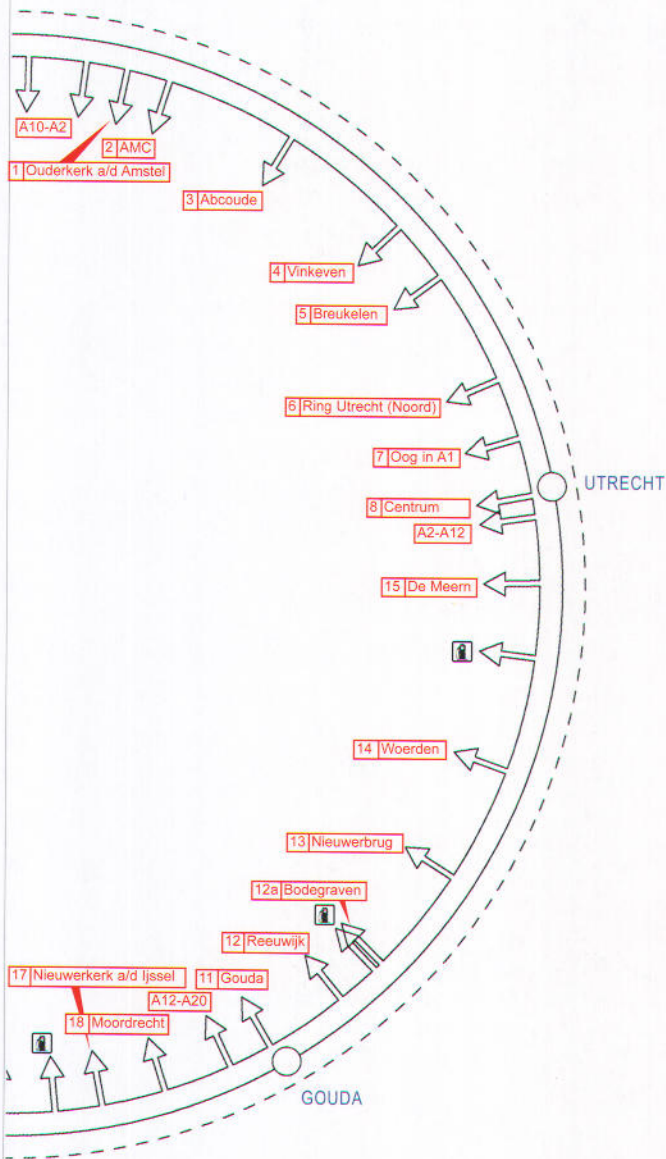


Observations

54 exits in 153 km
average of - 1 exit every 2.8 km
- 1 exit every 1.7 min
(@100 km/h)

Largest gap -
Leidschendam
Zoeterwoude Dorp

Heaviest concentration -
TU Delft to Leidschendam



Key to symbols

Traffic sign classification

Junction number according to motorway with junction name (a junction name is the highest name on the sign)

6	Hoogmade
---	----------

Exit for tankstation



Statements

The frequency of the junctions reveals that the motorway has a local as well as regional and national function. Motorway journeys can be only a few minutes long. The journey lengths around the major cities are indeed very short on average (see Hardinfo - On the Road - Distance).

Recent developments on the A12 at Utrecht however suggest that the role of the motorway as a long distance connector is being re-addressed.

Design Tasks

To choose between the motorway as a local, regional or national connector.

(see Road - Form)

If the motorway is both for long and short distances there is a need to design for radically different journey lengths.

(see Softinfo - Recognition + Landmarks)

(see Road - Buildings - Middle of the Road)



Key to map

Exits from the 'rondje randstad', shown at the point of the exit itself. The type of exits are categorised into 'stop', 'pause' or 'go' exits.

LEIDEN

DEN HAAG

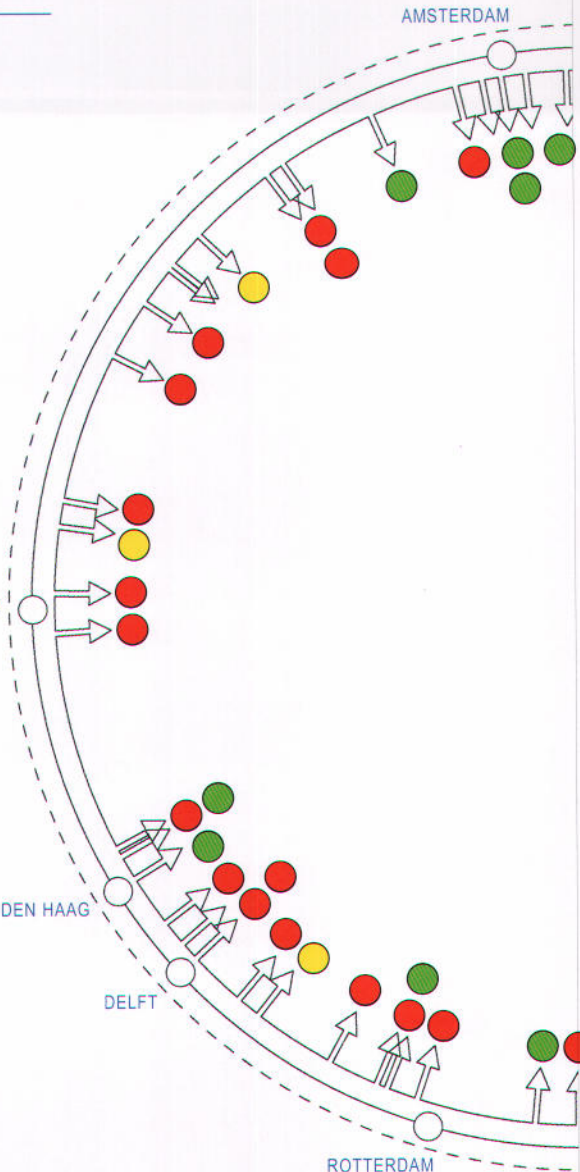
DELFT

AMSTERDAM

ROTTERDAM

Observations

54 exits in 153km
 Stop exits = 37 (69%)
 Pause exits = 6 (11%)
 Go exits = 11 (20%)



Key to symbols

Traffic sign classification

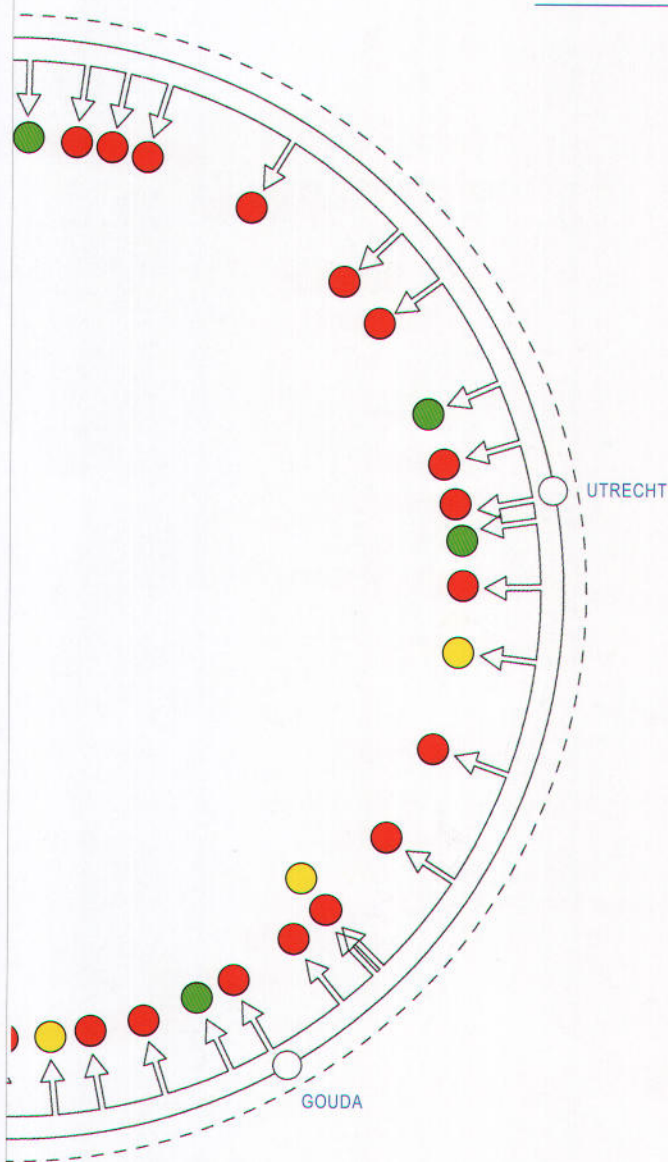
'Stop' junction - exit leads to a destination point



'Pause' junction - exit leads to a service point the driver returns to the motorway



'Go' junction - exit leads to an on going road - not an end point



Statements

The different junction types indicate different ways that the motorway connects to its' surroundings and the wider infrastructural network.

As more time will be spent on the road in the future (see Hardinfo - On the Road - Duration) it is conceivable that there will be an increased demand for pause exits, that is exits that 'belong' to the motorway itself. This scenario supports the notion of treating the motorway as a public space in itself.

Design Tasks

To address the proportional balance between the different types of junction.

(see Road - Form and Road - Buildings - Programme)

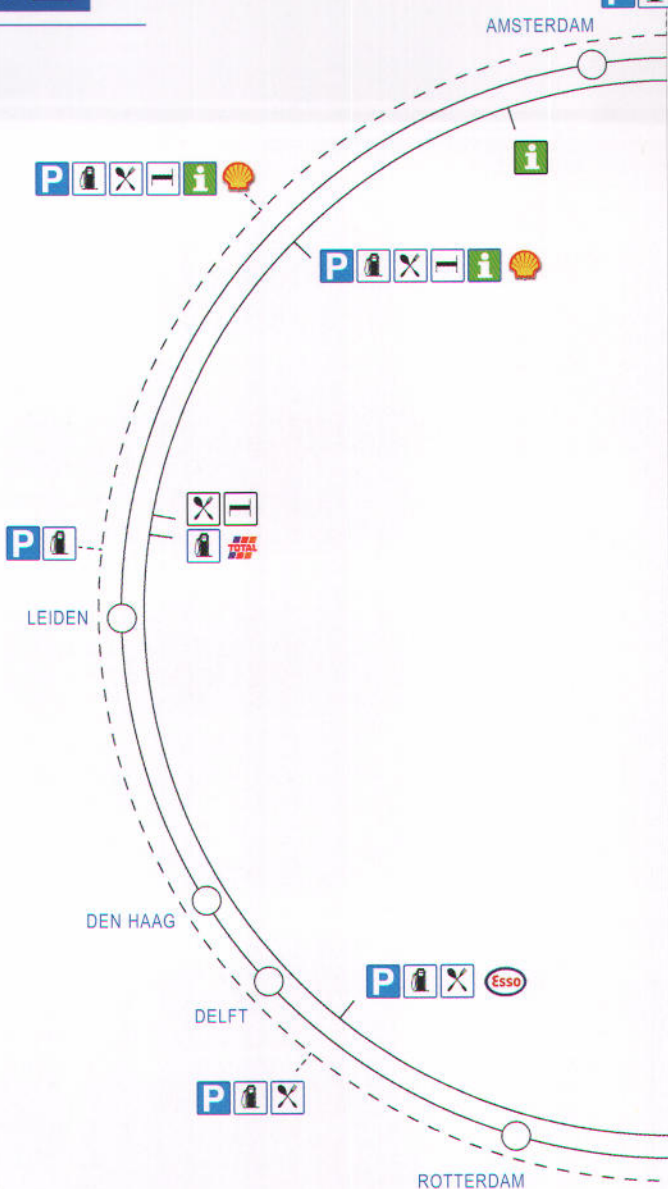






Key to map

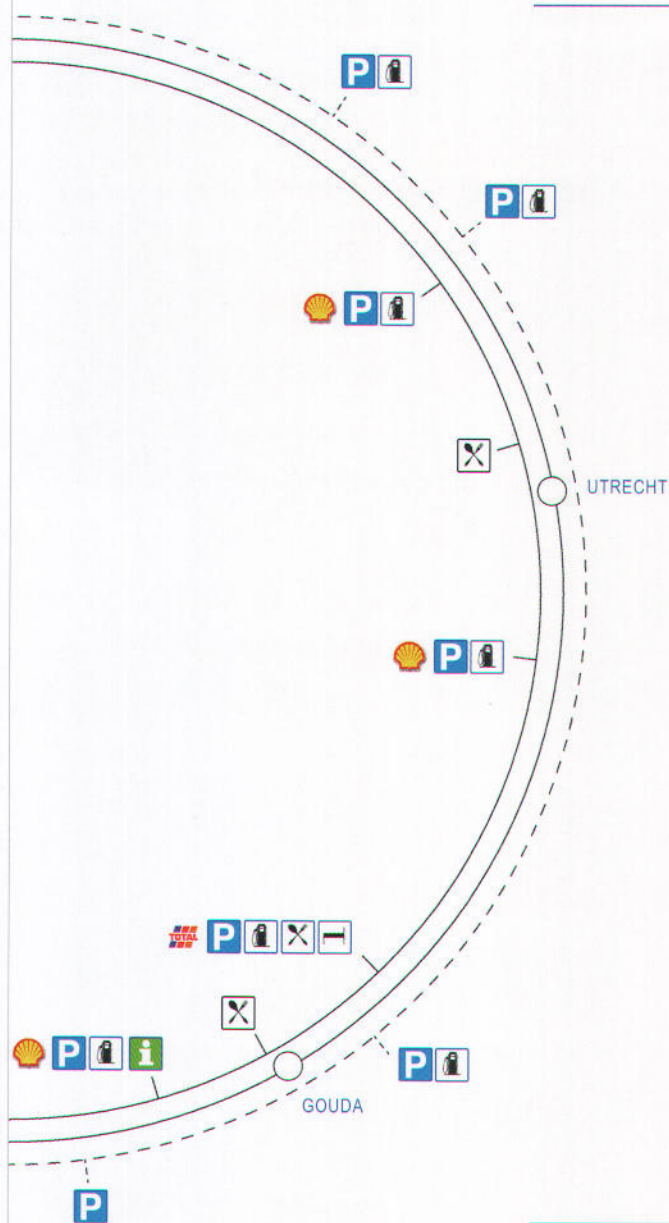
The positions of service-stations are extracted from the film. The types of services provided are deduced from road signs. For the outer ring the locations and services are taken from the road map. The road map does not however indicate all services that are signed on the road.



Observations

Inner ring -
10 servicestations in 153km
- average of -
1 servicestation every 15km
1 servicestation every 9mins
(@100km/h)

Outer ring -
8 servicestations in 153km
- average of -
1 servicestation every 19km
1 servicestation every 11mins
(@100km/h)



Key to symbols

- P** Parking
- Tankstation
- Restaurant
- Accommodation
- Information
- Black border indicates service is not at a designated 'pause' exit
- Tankstation franchise

Statements

Service stations are an official part of the Dutch motorway. (see Hardinfo - Road - Responsibilities, Regulations, Policies)

Officially service stations offer, at most: fuel, parking, restaurants, information and hotel rooms.

The unofficial services on offer are however increasing; for example, the Schiphol service station has a suit shop.

The design of the place itself is also developing. The service station is progressing from being a 'universal shed'; Philip Samyn's designs are leading the way in this aspect. (see Verge - Service stations)

Design Tasks

The expansion of the programmatic function of service stations. (see Verge - Buildings - Programme)

Moving away from the 'universal shed'; to address the identity of the service station in relationship to its context. (see Verge - Service stations) The service station's spatial relationship to the road itself can also be addressed; it is, after all, a part of the motorway itself. (see Road - Buildings)





71 PERCEIVED CROSSINGS (SUPER)

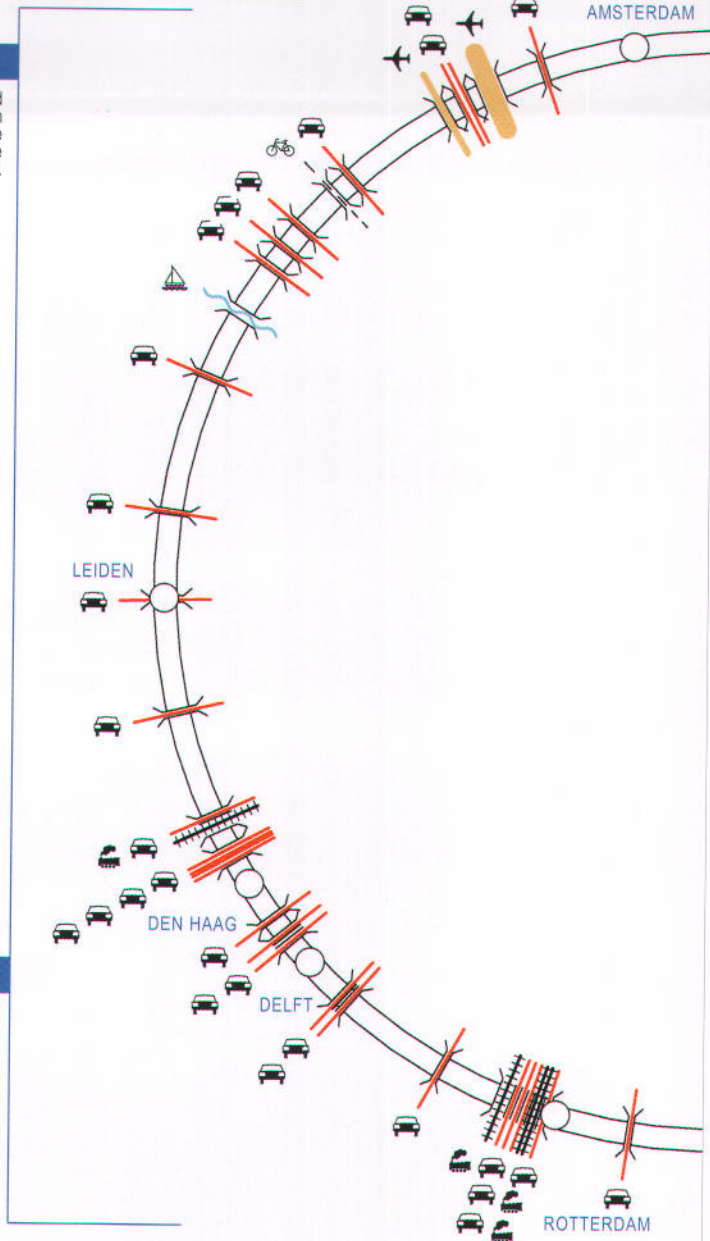
Key to map

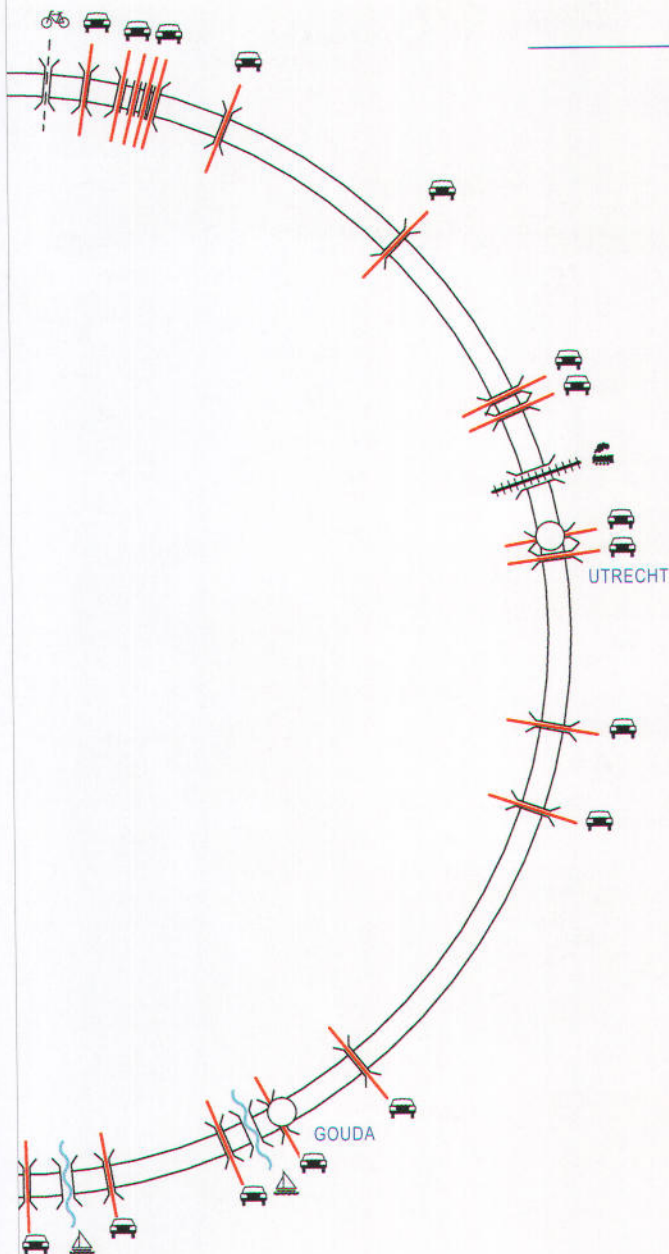
The type of crossing is noted and extracted from the film. In reality it is possible that there are more crossings which are not perceived in the film.

Observations

57 crossings in 153km
Road crossings = 45
Train crossings = 5
Water crossings = 3
Cyclepath crossings = 2
Airport runway crossings = 2

average of -
1 crossing every 2.7km
1 crossing every 1.6mins
(@100km/h)





Key to symbols

Crossing classification

Road network



Cycle path



Rail network



River, canal, stream



Airport runway



Statements

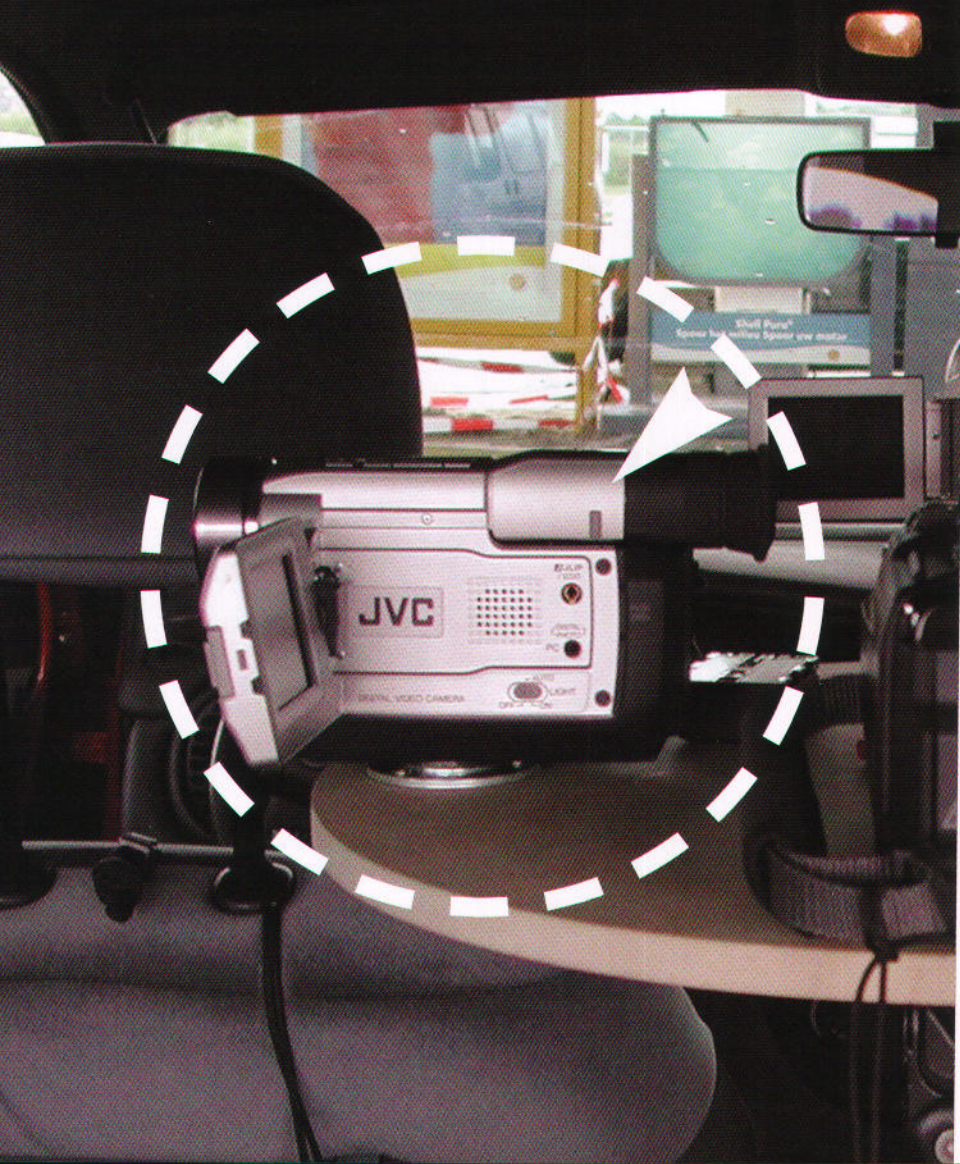
Crossings are designed primarily from an engineer's perspective. However they can also become landmarks. (see *Softinfo - Recognition + Landmarks*) The landmark quality could relate to intensity (eg. Prins Clausplein) or aesthetics (eg. Erasmus Bridge).

Crossings along this motorway are all made by other infrastructural lines. Along other roads there are however other types of crossings; for example, eco-ducts (Dassentunnels A73) and buildings (Utrechtse Baan, Den Haag).

Design Tasks

The aesthetic and recognitional aspect of crossings.

Crossings created for other programme types. (see *Road - Field Crossings*)







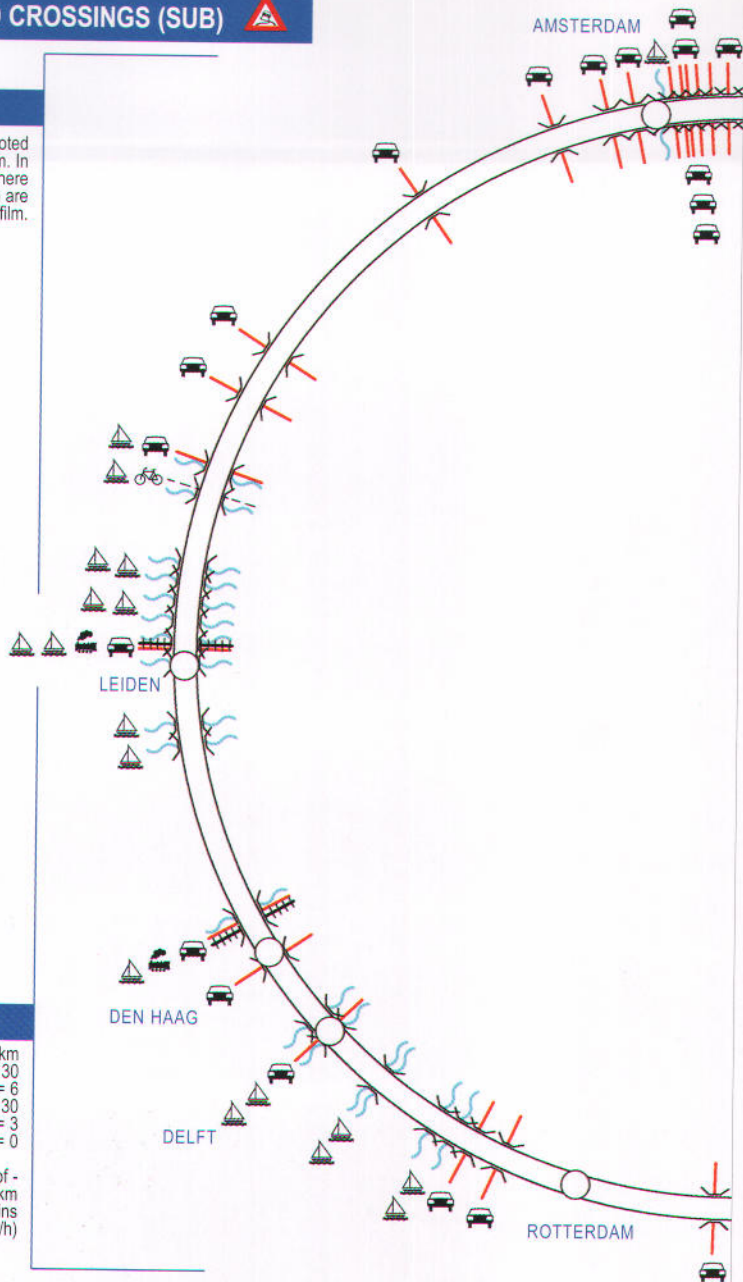


77 PERCEIVED CROSSINGS (SUB)



Key to map

The type of crossing is noted and extracted from the film. In reality it is possible that there are more crossings which are not perceived in the film.



Observations

70 crossings in 153km
Road crossings = 30
Train crossings = 6
Water crossings = 30
Cyclepath crossings = 3
Airport runway crossings = 0

average of -
1 crossing every 2.2km
1 crossing every 1.3mins
(@100km/h)

Key to symbols

Crossing classification

Road network



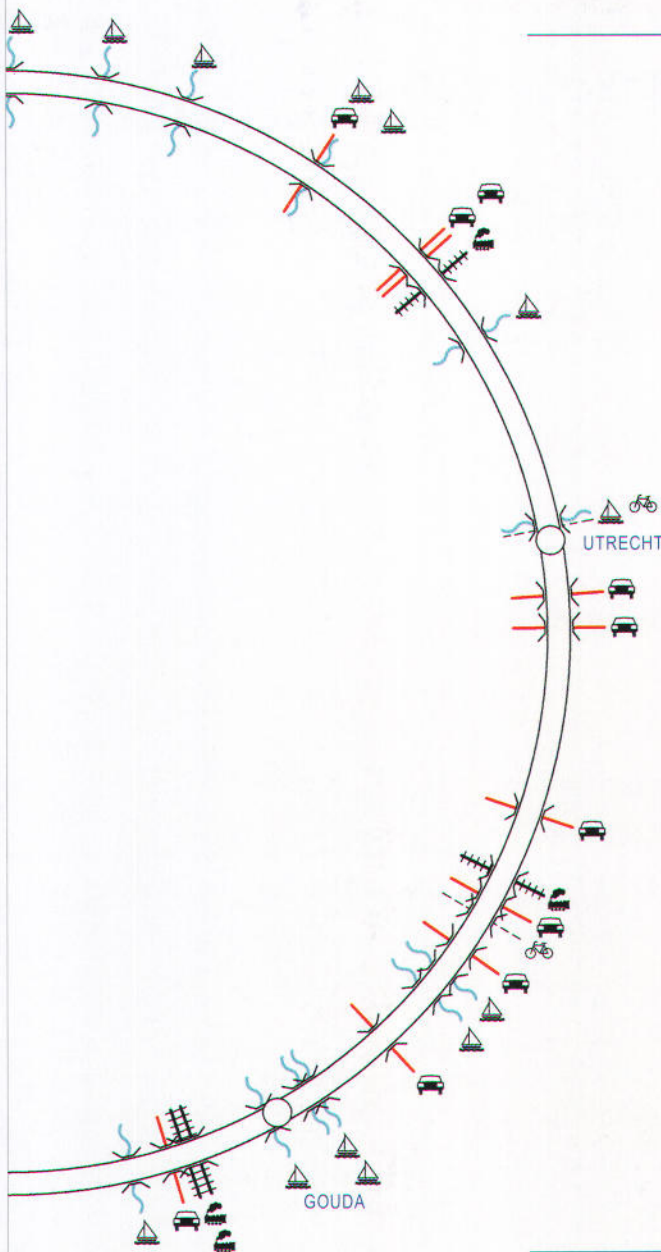
Cycle path



Rail network



River, canal, stream



Statements

There are more sub-crossings than super-crossings. However the majority of them are barely noticed by the roaduser (the 'perceived sub-crossings' represented here are noted with the luxury of the right cam view on film).

As nearly half of these crossings are water crossings, an essential part of the Delta Metropole, there seems to be a lost opportunity to express the area's identity.

Design Tasks

To make visible the water crossings as part of the identity of the Delta Metropole. (see Road - Field Crossings)







AMSTERDAM

RADIAL SCALE 1:50000

10MM=0.5KM

2.0

1.0

1.0

2.0

3.0

4.0

5.0

LEIDEN

DEN HAAG

DELFT

ROTTERDAM

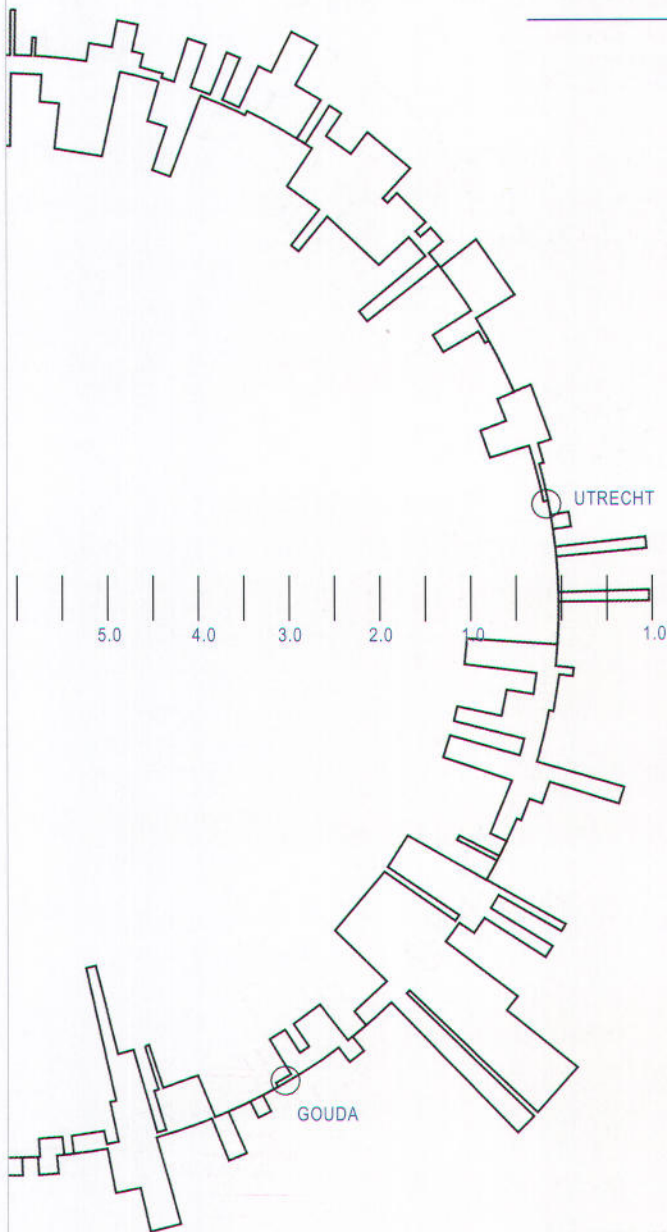
Observations

Category	In	Out
0m	37%	53%
0-50m	7.5%	6.5%
200-500m	35%	28%
1000m-2000m	20.5%	13%

Key to map

The 'depth of field' can be defined as the maximum estimated distance that the right or left camera can see before reaching an edge, that blocks the sight line. Three-dimensional objects can sometimes be seen, which are situated beyond the (view) edge. The 'depth of field' has been noted from a range of 6 categories:

Category 1	= 0- 2000m
Category 2	= 0- 1000m
Category 3	= 0- 500m
Category 4	= 0- 200m
Category 5	= 0- 50m
Category 6	= 0m



Statements

With the continuing building programme within the Randstad, it can be expected that the amount of 'deep field' stretches along the road will decrease due to the arrival of new built areas.

Openness is characteristic of the Delta Metropole. And a variety in the depth of field could help to avoid spatial monotony.

(see Field - Open landscape panoramas)

Design Tasks

To devise strategies for maintaining or emphasising depth. (see Field)

Overall strategies for creating variety in the depth of field.



BUILT WALL



BUSINESS



GRASS AND CROPS



GRASS WALL



GREENHOUSES



HOUSING



JUNCTION GREEN



PARKING/SERVICES



PLANTING



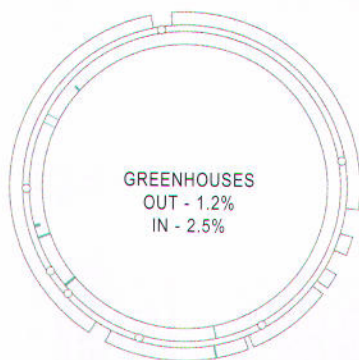
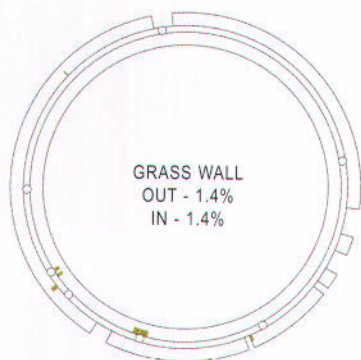
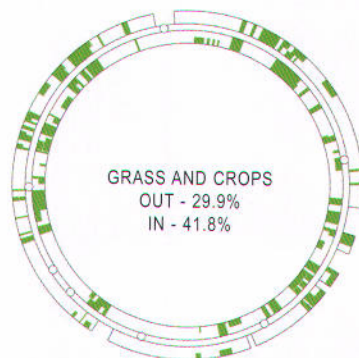
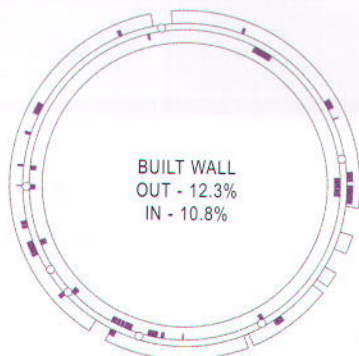
TUNNEL



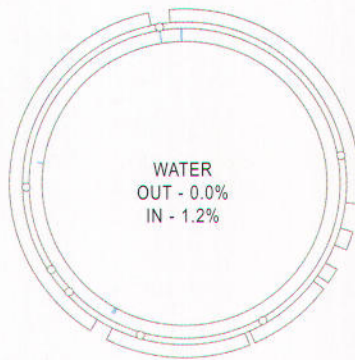
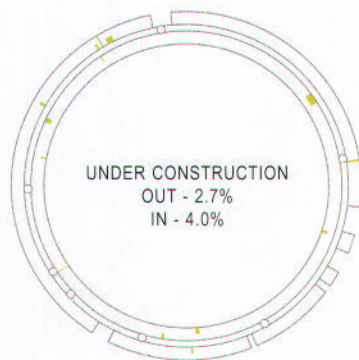
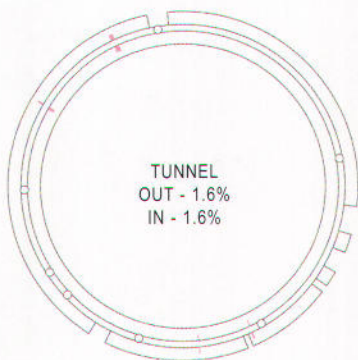
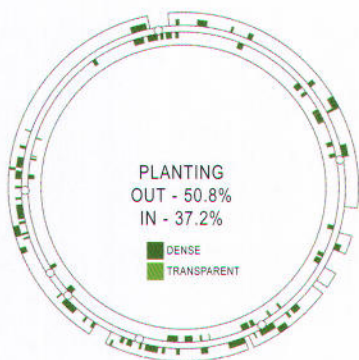
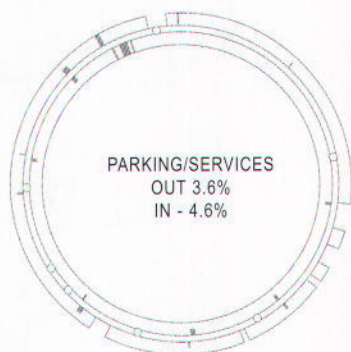
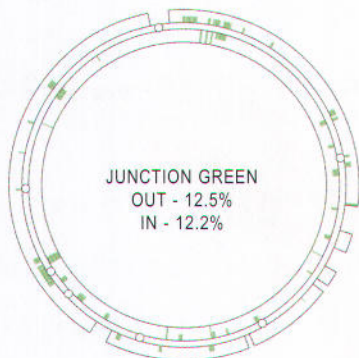
UNDER CONSTRUCTION



WATER



Total =
out - 134.6%
in - 134.7%
due to overlapping of
vergescape/fieldscape



**Key to map**

The programme categories are selected from the film on the basis of frequent, recognisable, and distinguishable images. These are notated only when they occur for a minimum distance of 300-500m.

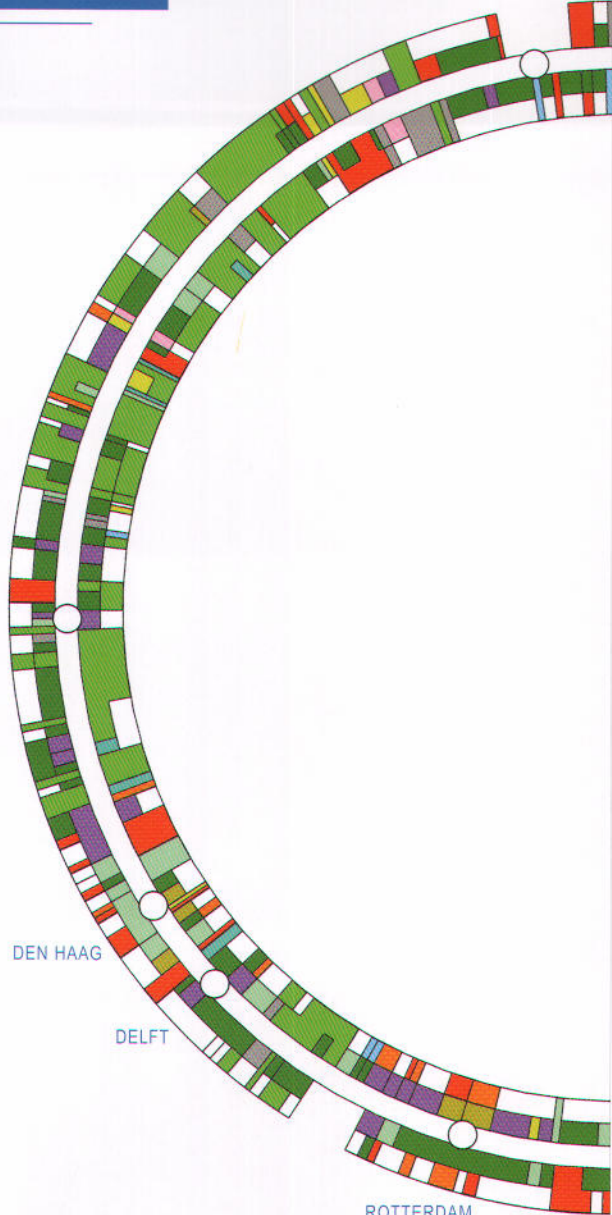
These images are grouped into a total of twelve categories. The maps show where the programme categories are situated, the distance that they occupy along the route and whether they exist in the verge or field.

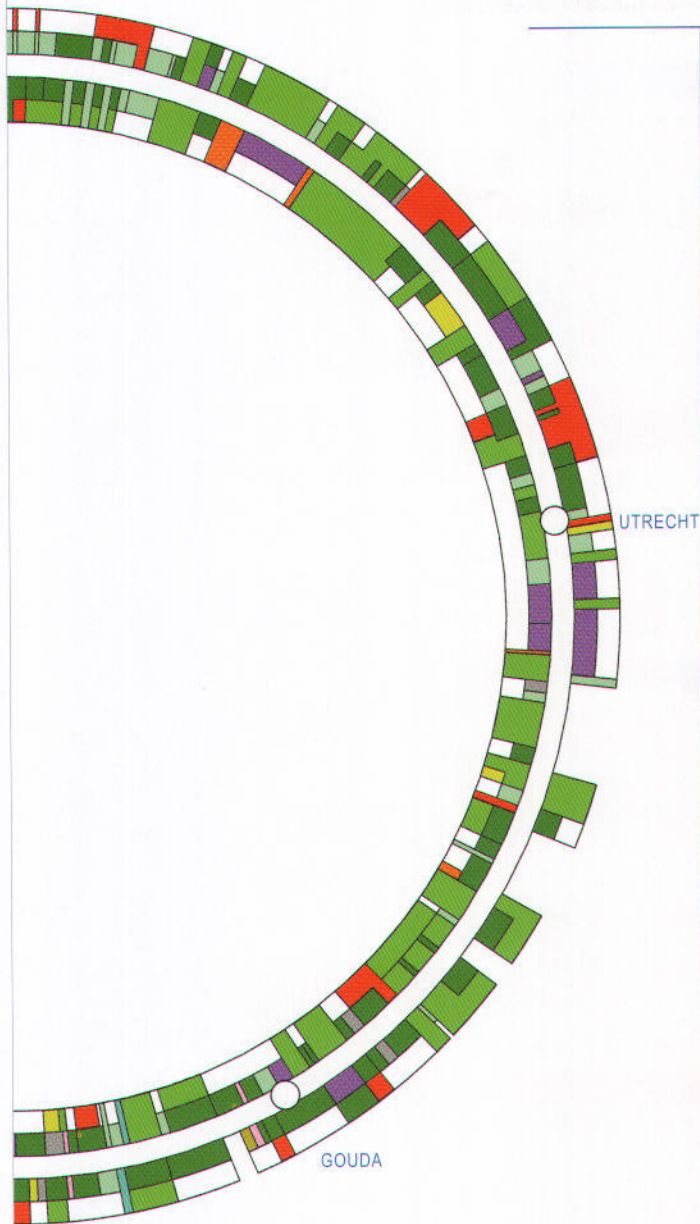
LEIDEN

DEN HAAG

DELFT

ROTTERDAM





Key to symbols

Programme classification

Built wall	
Business	
Grass and crops	
Grass wall	
Greenhouses	
Housing	
Junction green	
Parking/services	
Planting	
Tunnel	
Under construction	
Water	

Statements

There is an unclear representation of the 'landscape' that the roaduser drives through. This is evident when we see the proportions of the programmes (eg. 50.8% planting, 1.9% housing) and their placing in regard to context (eg. planting around Amsterdam).

This mis-representation is also a result of the large amount of 'non-programme' present (built wall, grass wall, junction green, and, in some cases, planting). This 'non-programme' is often created by policies and regulations. (see Hardinfo - Road - Responsibilities, Regulations, Policies)

Design Tasks

A clearer representation of the context. (see *Verge - Purge*)

To devise new programme for 'non-programme' areas. (see *Verge - Identify*)

**Key to map**

The programme categories are combined with the depth of field

RADIAL SCALE 1:50000

10MM=0.5KM

2.0

1.0

1.0

2.0

3.0

4.0

5.0

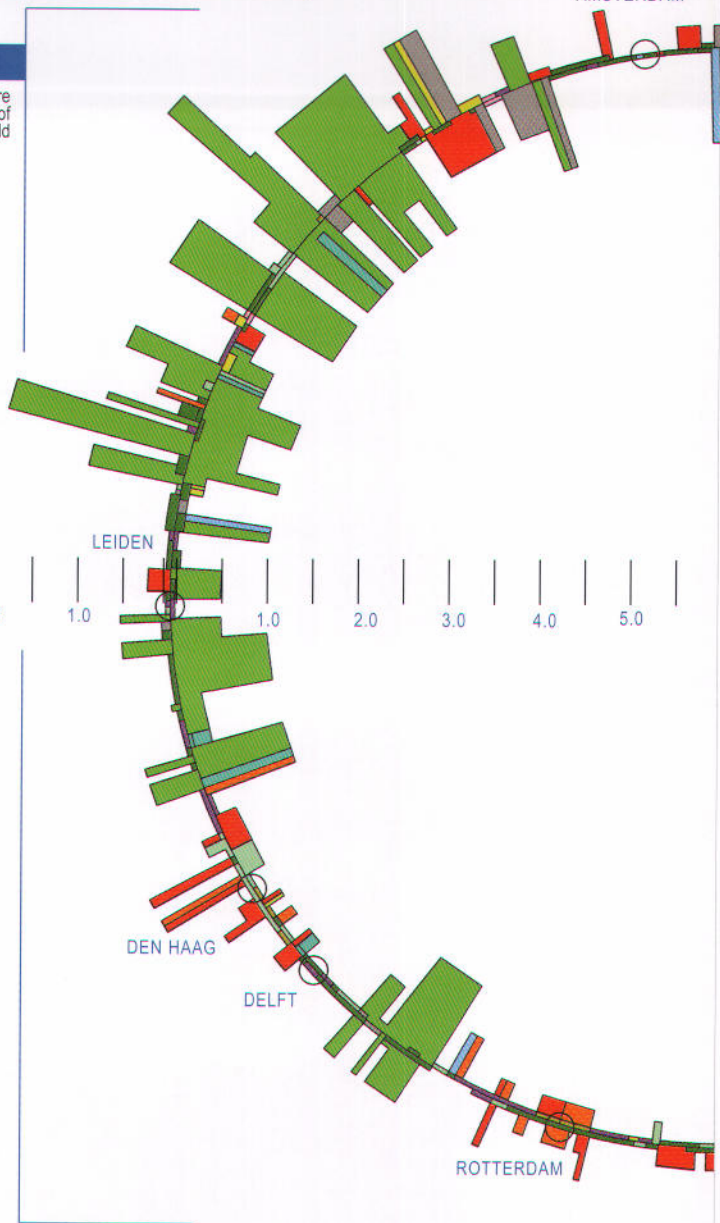
LEIDEN

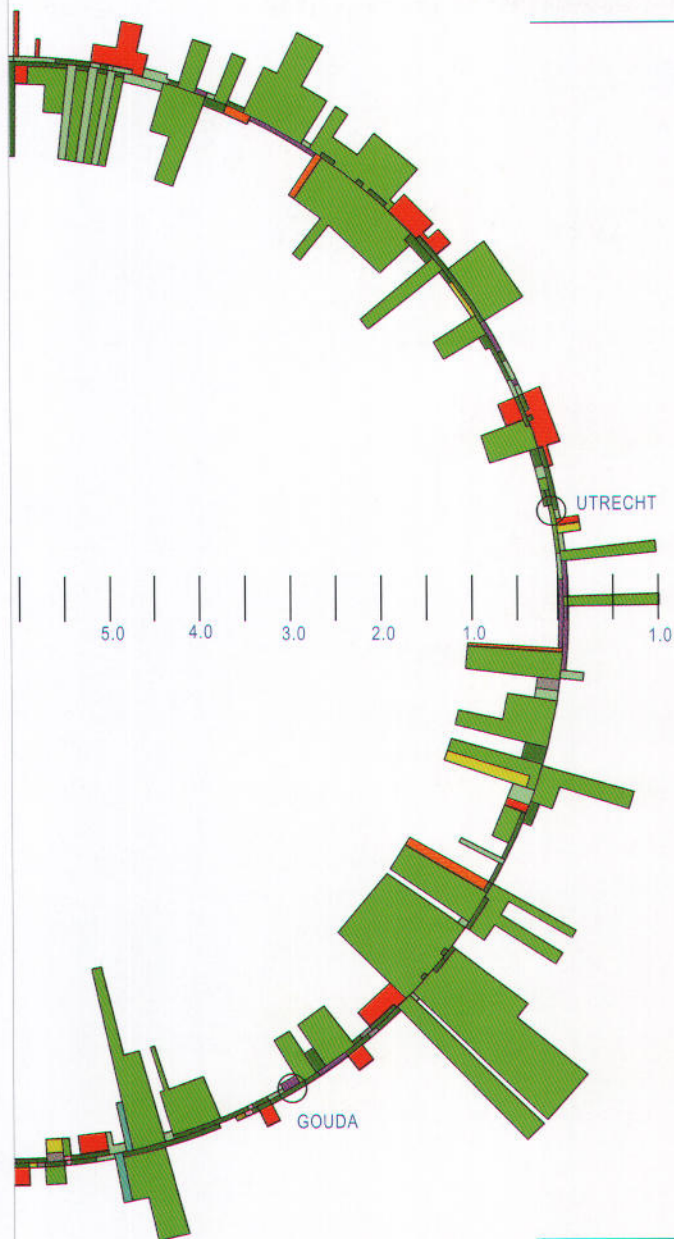
DEN HAAG

DELFT

ROTTERDAM

AMSTERDAM





Key to symbols

Programme classification

Built wall	
Business	
Grass and crops	
Grass wall	
Greenhouses	
Housing	
Junction green	
Parking/services	
Planting	
Tunnel	
Under construction	
Water	

Statements

Built wall, junction green and planting are responsible for a large proportion of the '0m' depth category.

'Deep field' areas are, for the most part, filled by grass and crops. These areas are however often fragmented by 'shallow field' or '0m' segments.

There is a relationship between the 'shallow field' areas and cities, however the programmatic relationship is not so clear.

Design Tasks

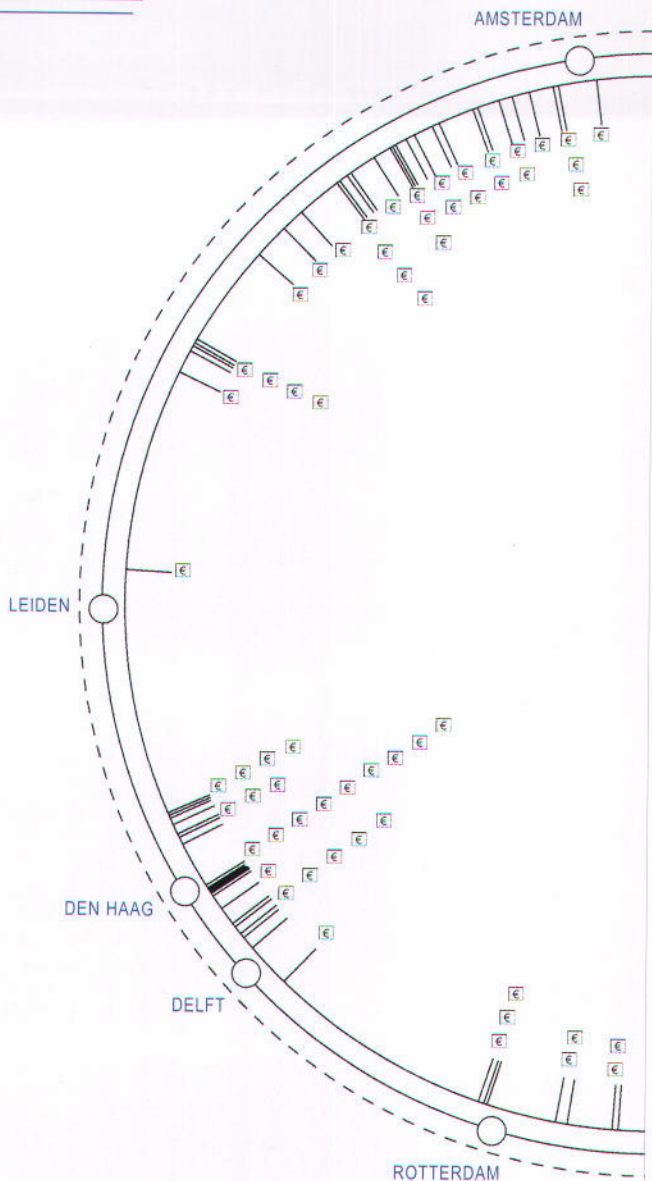
Attention to the programmatic cause of 'shallow field' segments, and their effect on open grass and crops areas and the representation of city areas.
(see *Verge - Purge and Verge - Planting*)



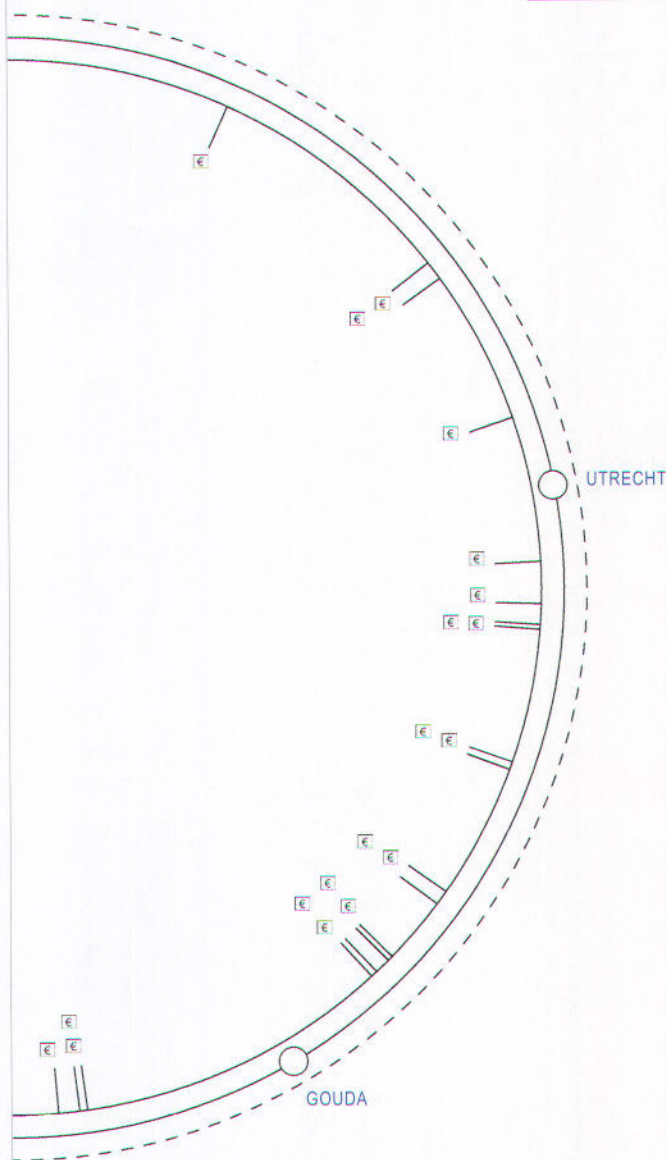


**Key to map**

This map shows the location of advertisement boards visible from the road.

**Observations**

69% of the signing lies West of the Amsterdam-Rotterdam axis
31% lies East



Statements

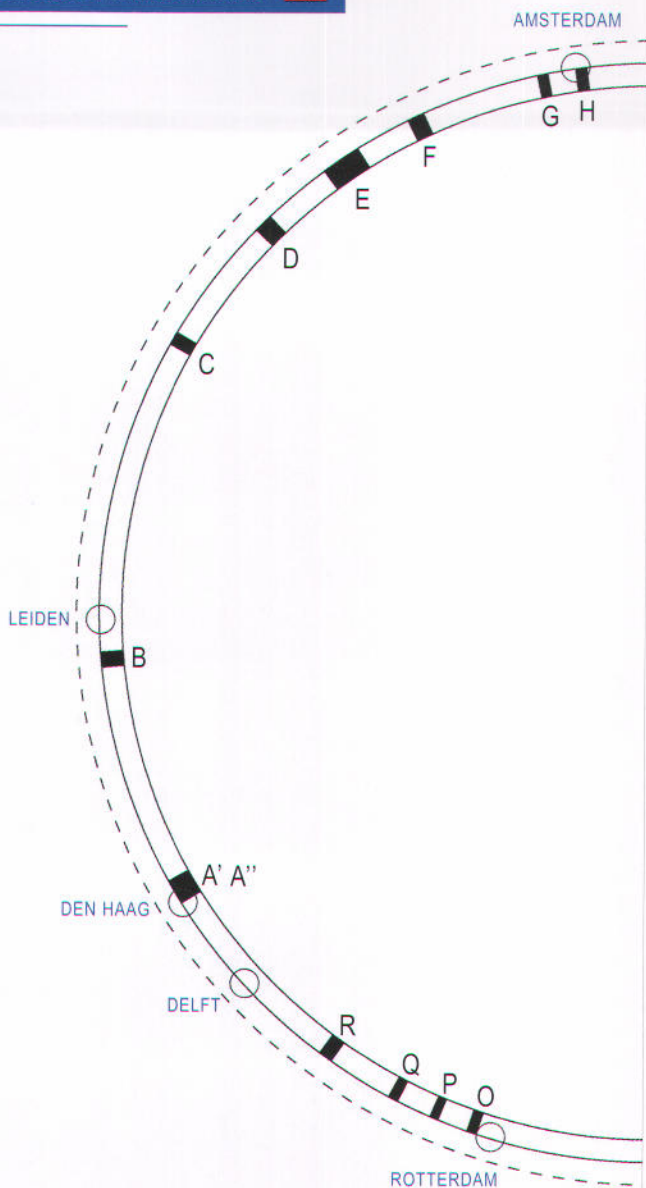
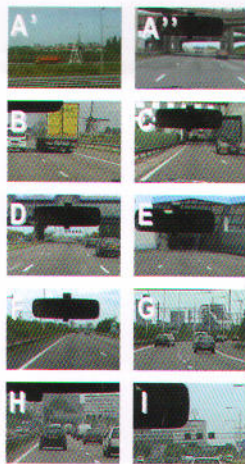
The appearance and distribution of signage is subject to strict regulations. (see Hardinfo - Responsibilities, Regulations, Policies)

This map shows commercial signage, but this is only the tip of the iceberg; navigational signage is always present in the road-users' view. It appears not only as permanent signs along and over the road but also as changing digital information and as a system of markings on the road surface itself.

Design Tasks

Only commercial and navigational signage is currently permitted. Educational or artistic signage could play a role in heightening the roadusers' driving experience.

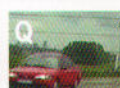
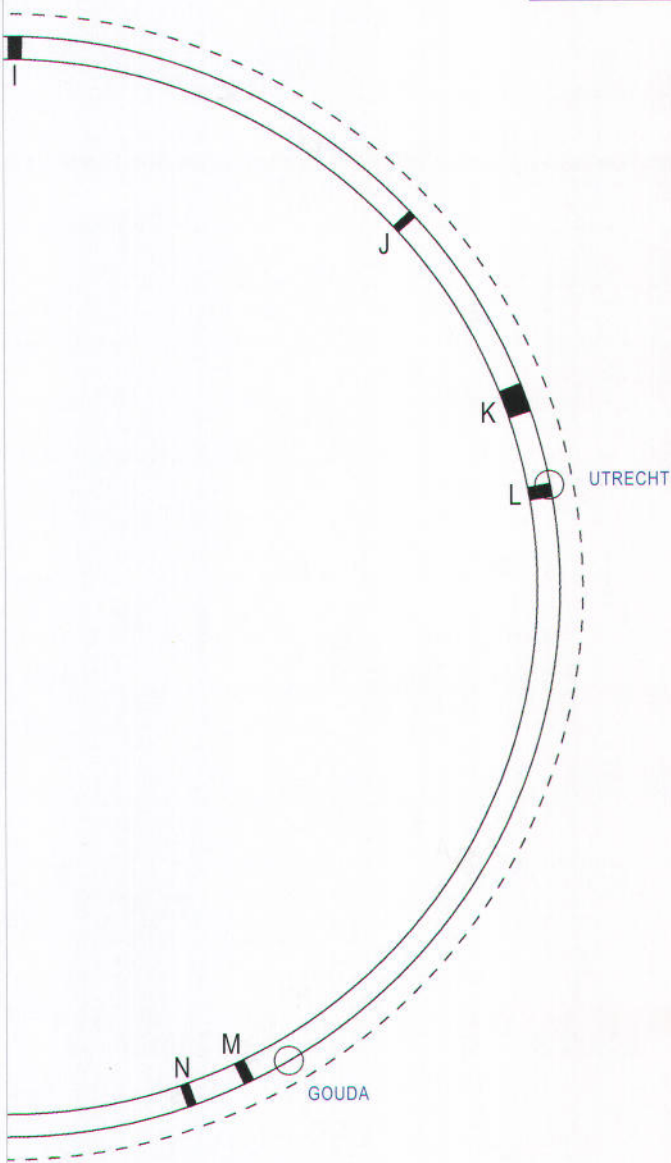
Signage is an extremely dominant part of the roadusers' visual intake. It can become aesthetic pollution. Reduction in traditional signage via technology, alternative positioning, and landscape or architectural 'events' has the potential to alter the roadscape significantly. (see Road - Surface, Road - Buildings, Verge - Identify, Verge - Soundscreens and Verge - Planting)



Key to map

Taken from an inventory from all cameras this map shows the stretches of the road from where landmarks or recognition views can be seen. We have identified recognition or landmarks as -

1. exceptional infrastructure elements
2. objects (individual buildings)
3. strong (city) panoramas



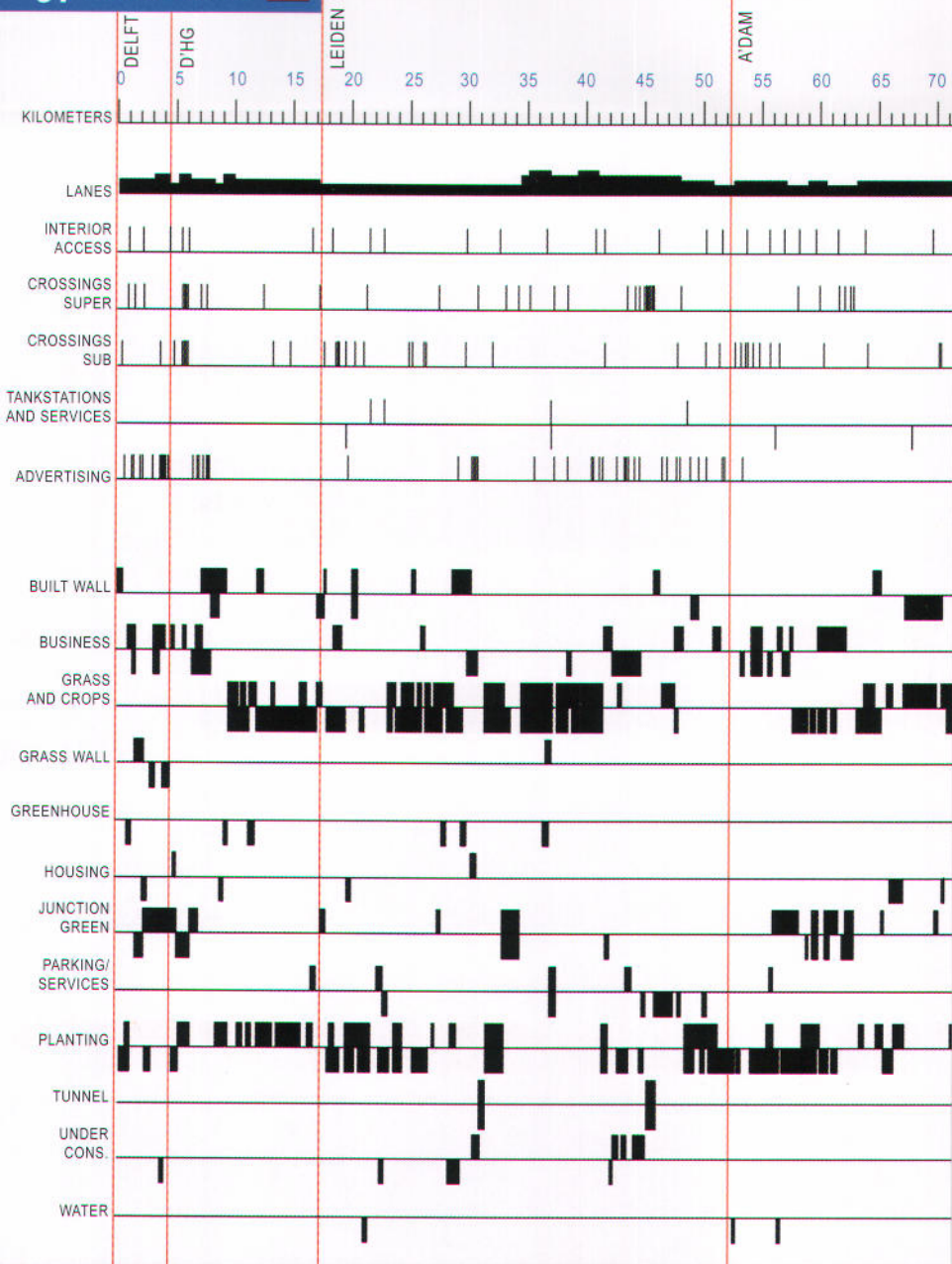
Statements

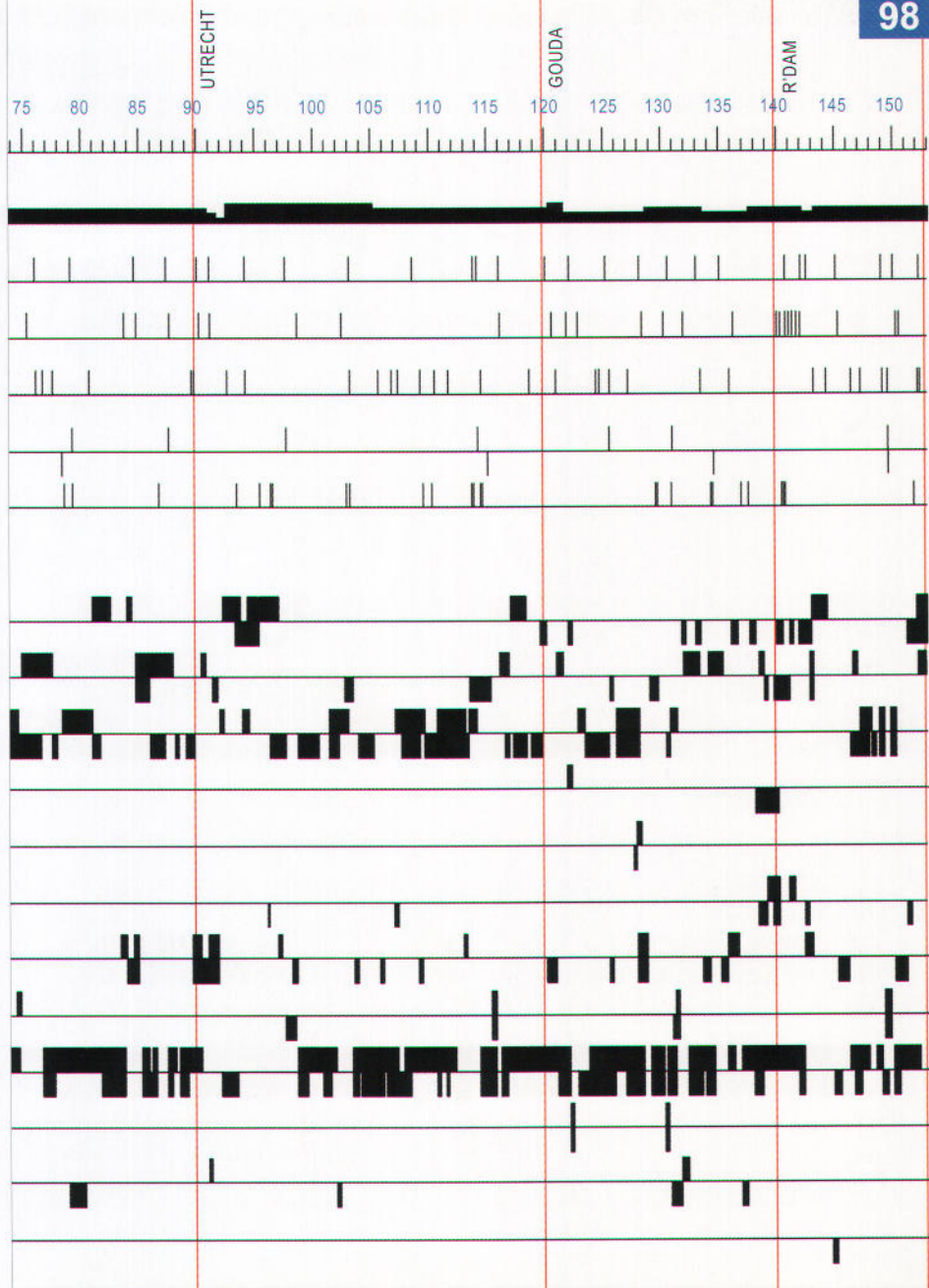
This is a subjective inventarisation of what we consider to be the landmarks along the motorway. However, even in our view, these for the most part not are not strong or striking landmarks. Exceptions are; the aqueducts, Prins Clausplein and the Rotterdam skyline from the A13.

Design Tasks

Landmarks and recognition points can improve the road-users' sense of orientation and place along a journey. Attention can be paid to this matter. (see Road - Buildings, Verge - Identify, Field - Urban Panoramas)

97 LINEAR MAPS





1. FUNCTIONAL

The Dutch traffic rules have evolved a system for the motorway which we regular intervals and junctions to be sign posted in a certain way

By questioning and playing with these rules the designer can create new

2. VISUAL

The particularities of the car as a space and the mobile perspective define relationship can often be unclear, monotone and unrepresentative of the

The aesthetic, spatial and programmatic quality of the motorway as a renewal.

SYSTEM

now take for granted. There are rules for servicestations to appear at

traffic systems and explore new spatial and programmatic opportunities.

EXPERIENCE

the roadusers' visual relationship with the surrounding environment. This context through which the motorist passes.

public space can be enhanced through intensification, representation and



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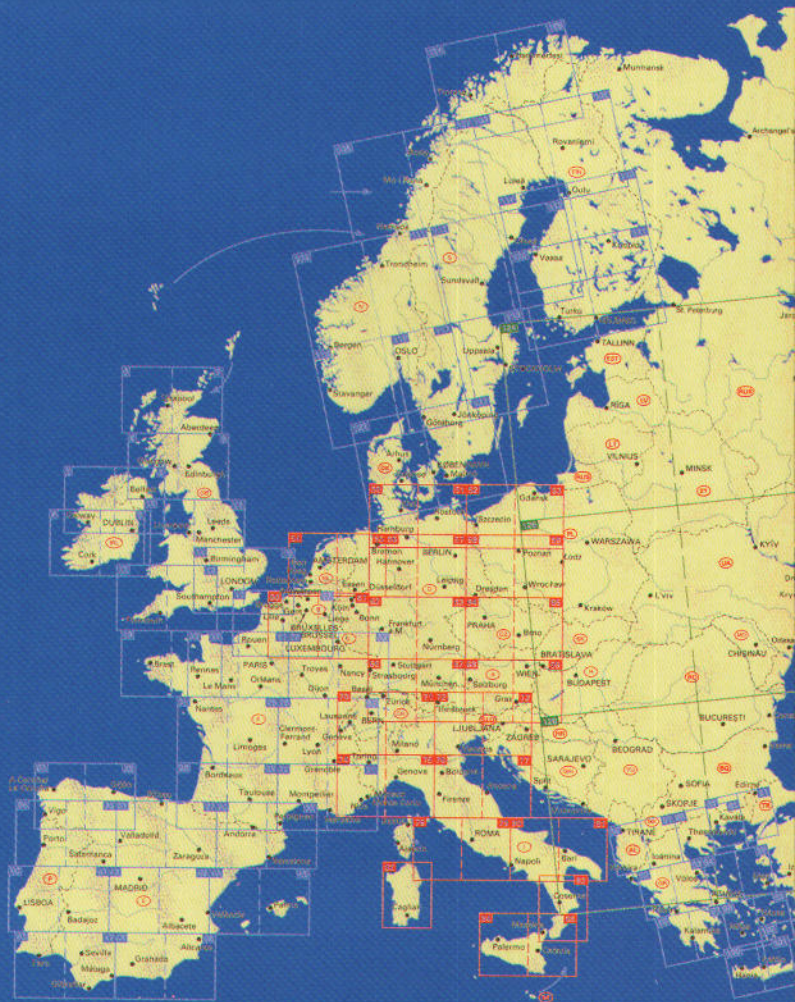
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Holland Avenue





DESIGN ROAD ATLAS

HOLLAND AVENUE

An introduction and examination of design terms, tools and strategies that relate to the roaduser's visual intake.

Holland Avenue declares the intent to consider the motorway, not solely as a tool to go from A to B, but as an environment that is in itself a place to be.

The Dutch ministry of Transport, Public Works and Water Management seeks a vision of tomorrow's road based upon a road-user viewpoint. *Holland Avenue* takes the motorways linking the Randstad cities as its case study.

Holland Avenue was conceived, designed and produced by Mecanoo: Francine Houben, Magnus Weightman, Berthe Jongejan, Anthony Hoete and Joost Verlaan in conjunction with the Rijkswaterstaat, Wegen naar de Toekomst, Wegdek Pilots team: Marcel Koeleman and Ton Maagdenberg





↓ IN (BRIEF)

A ROAD TO THE FUTURE

The Dutch Water and Highways Board (Rijkswaterstaat or RWS) seeks a vision of tomorrow's road based upon a 'behind-the-wheel' experience - a road user viewpoint. The vision should be aimed at the roaduser, including road designers, planners and decision makers.

INFRASTRUCTURE

The RWS recognised certain highway events might provide useful mechanisms through which driving experiences could be enhanced including:

- driving through agricultural / natural OR densely-built landscapes
- driving through tunnels / junctions
- driving past services and information points

⤴ OUT (HOLLAND AVENUE)

In response to the question posed by RWS, "what constitutes an interesting driving experience?" the Research Atlas introduces a strategy for collecting and analysing information relevant to the roaduser's experience. Information is categorised as belonging to either 'HARD INFO', the empirical and objective world of facts and figures, or 'SOFT INFO', the subjective recording of a moving roaduser's visual intake. This recording, done by video-ed observation, is notated and mapped to create a visual representation of the roaduser's experience which is then analysed through an observation and questioning process. This process informs the ensuing design section of the study.

The Design Atlas introduces and examines design terms, tools and strategies that relate to the roadusers' experience. A categorisation of three spatial conditions, road, verge and field, is made and the design potential of each is explored. Representation of the designs is made through roaduser perspectives and accompanying diagrams.

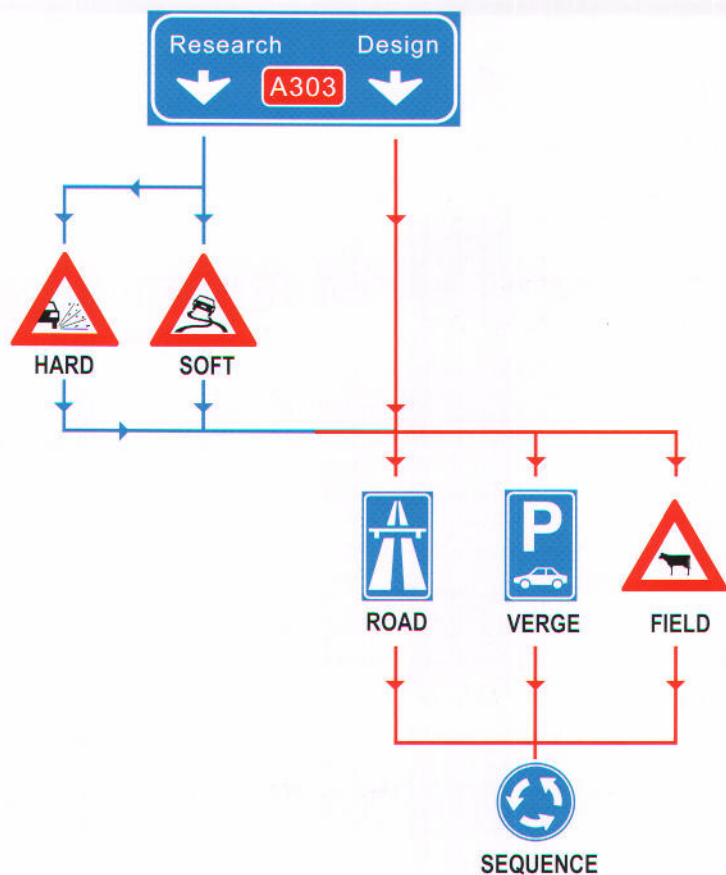
The term 'Holland Avenue' declares the intent to consider the motorway, not solely as a tool to go from A to B, but as an environment that is in itself a place to be.

CASE STUDY

In order to understand road culture a case study was chosen. Known locally as the Rondje Randstad, this 'road' is unlike the conventional ring road which circumnavigates and serves a single metropole. The Rondje Randstad is perceived as a *metroloop* uniting six different roads (A2, A12, A20, A13, A4, A10) into one continuous loop road and thereby connecting the four largest Dutch cities to each other. The ring road as networker.

PROJECT TEAM

The road atlas forms part of the Mecanoo Architecten A303 project. The Road Atlas was conceived, designed and produced by the A303 project team: Francine Houben, Magnus Weightman, Berthe Jongejan, Anthony Hoete and Joost Verlaan in conjunction with the Rijkswaterstaat Wegen naar de Toekomst, Wegdek Pilots team: Marcel Koeleman and Ton Maagdenberg.



3 SPATIAL CONDITIONS

ROAD, VERGE, FIELD

03

ROAD



SURFACE - advertising - marking - identity - paid lanes - lighting

09

FORM - multi lanes - global motorway merged with local - stacked lanes
- global separated from local

11

BUILDINGS - above - below - one side - middle of the road - programme
- transferium

13-18

FIELD LINKS / CROSSINGS - under - over - connect

19

VERGE



PURGE

23

IDENTIFY - servicestation - planting - soundscreen

25-32

FIELD



OPEN LANDSCAPE PANORAMA

35

URBAN PANORAMA

36

PRINCIPLES FOR MAKING A PANORAMA

37

SEQUENCE



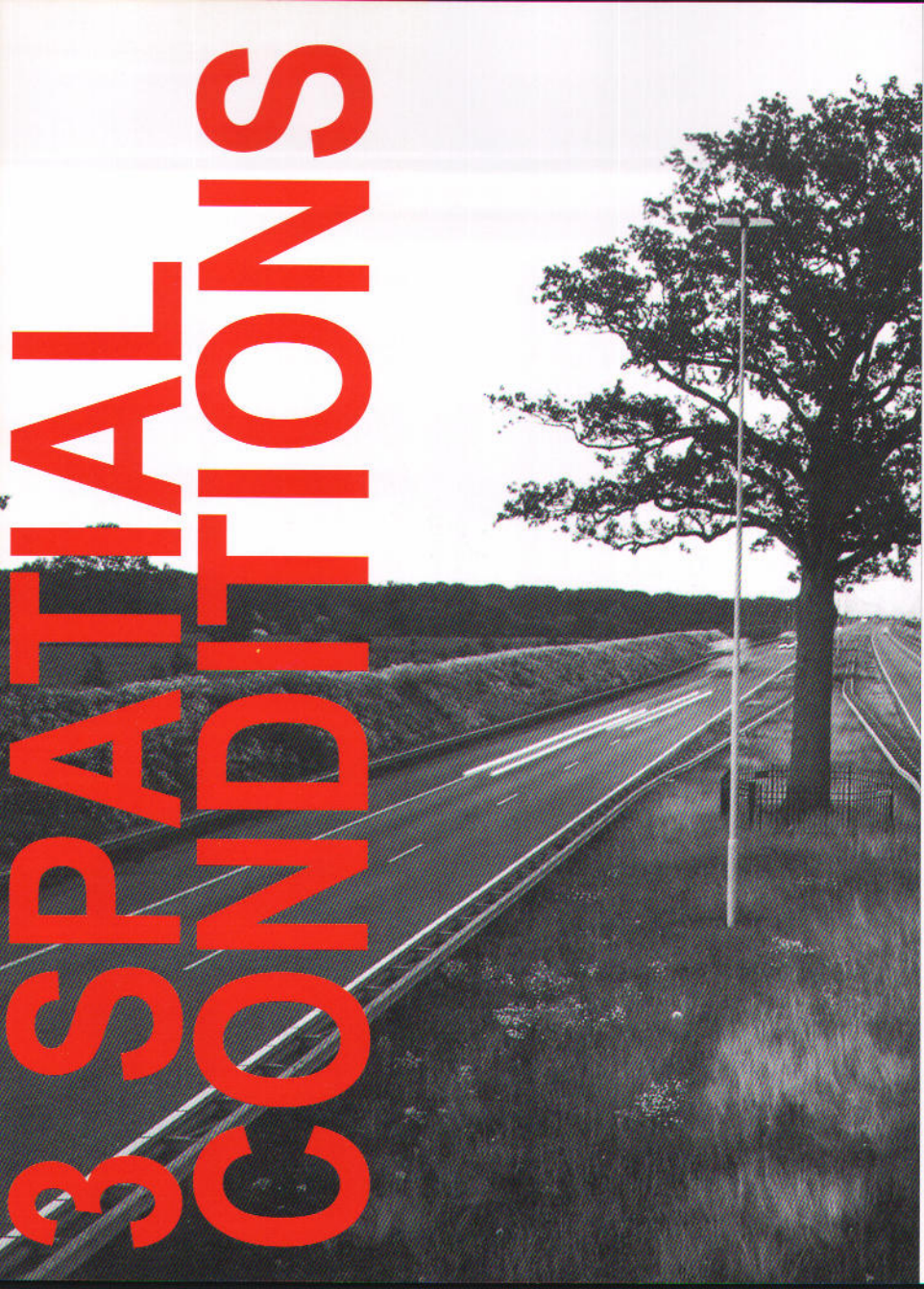
CARTOON STRIP

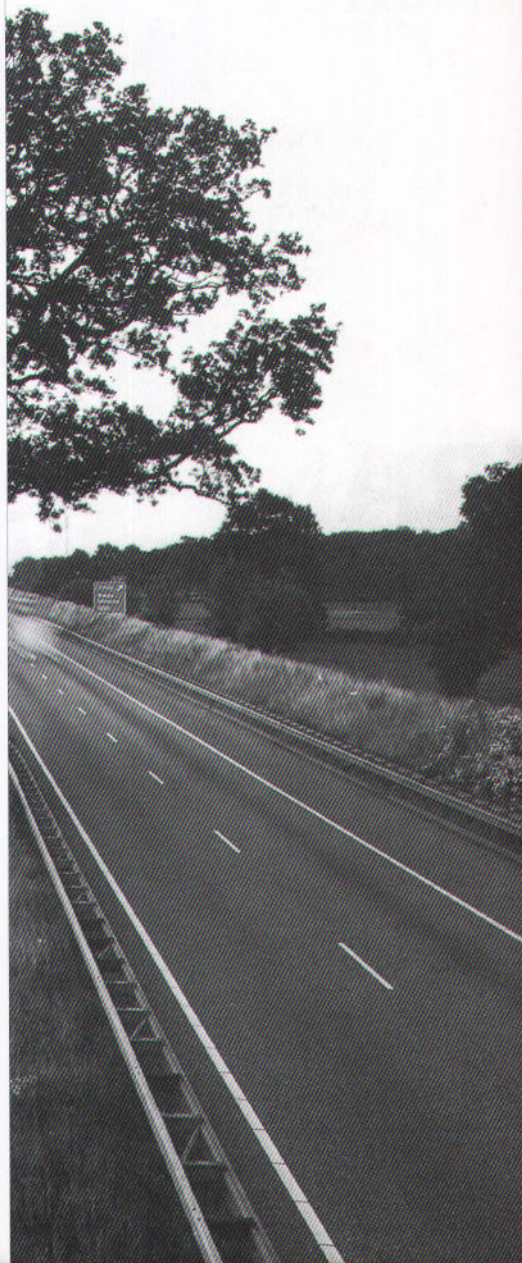
42-49

GREEN PAGE

50

3 SPATIAL CONDITIONS





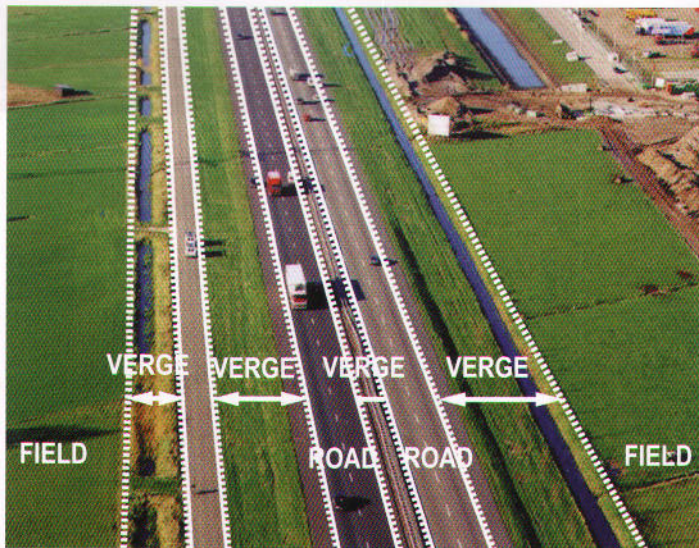
The Design Atlas has evolved from observations, discussions and ideas raised by the research for the Hard and Soft Info sections. It is intended to instigate a design approach towards motorways for the future that takes the roadusers' experience as its' central standpoint. The Design Atlas has been arranged as a catalogue of design strategies and tools. As with all catalogues it can be added to over time.

The framework for the catalogue is based on three identified spatial conditions: road, verge and field. These conditions make up and influence the total view of the roaduser. A sharp contrast between the different conditions is sometimes difficult to make. However, in the same sense that the terms 'roof', 'façade' and 'entrance' are part of a language that the architect uses when speaking about a building, the definition of 'road', 'verge' and 'field' is introducing a terminology that can be used to assist the designer.

ROAD

The road is the asphalt or concrete surfaced construction that the roaduser drives on. It is the chief carriageway, consisting of a minimum of two lanes in each direction.

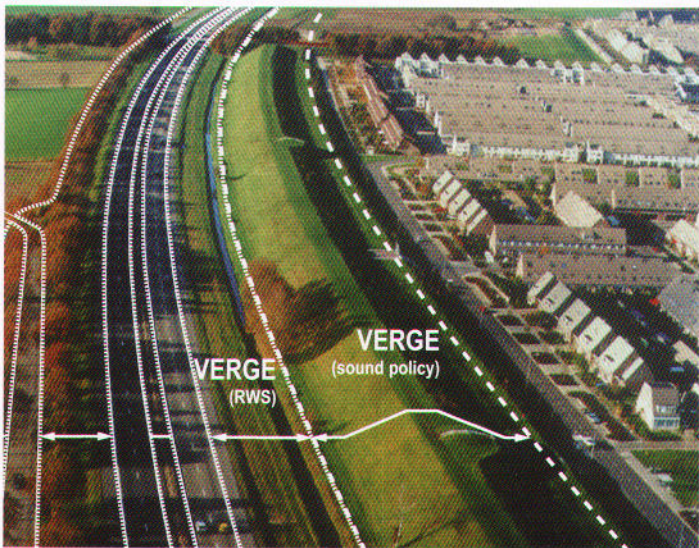
The road is made up by a technically defined system of lanes, junctions, signage and crossings that has its' own aesthetic quality. However the roadusers' experience could be transformed by questioning the system and enhancing its' spatial use.



VERGE

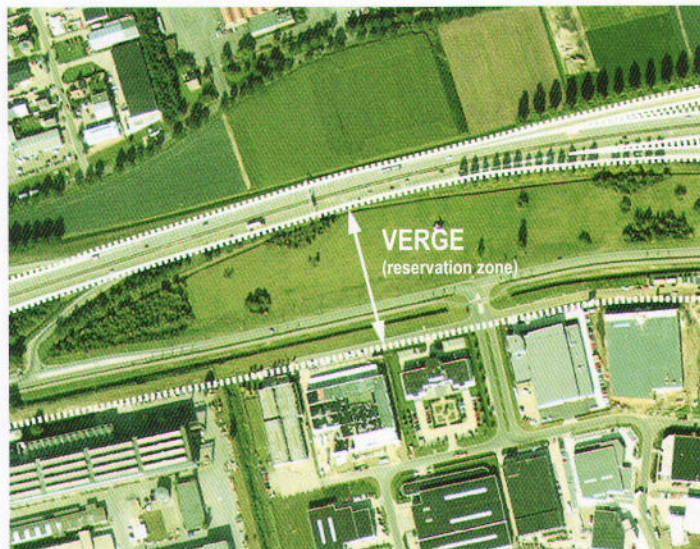
The verge is, firstly, the space that spans from the 'hard shoulder' (emergency lane) to the drainage ditch or drain. It is variable in width according to the treatment of this area (see [Hard Info - Responsibilities, Regulations, Policies](#)).

Secondly it is the space that is directly influenced by the consequences of the motorway. This impacted area can include the space used to house a servicestation or junction. It also includes areas that are subject to rules and policies implemented because of the presence of the motorway in relation to its' surrounding environment*. In the Netherlands sound and pollution policies are prevalent and rising, (see side + opposite page top)



*There are 4 factors that have an influence on the surroundings along the motorway:

- reservation zone for a future broadening of the road
- restricted zone in relation to explosive and dangerous substances that are carried along the regarding route
- 55dba sound contour within which no housing is allowed
- air quality - European guidelines dictate air quality norms that result in restricted zones depending on the roads surrounds



In the map Programme: Scenography in the Soft Info section certain elements are to be found predominantly in the verge area: built wall, grass wall, junction green, parking/services and planting. The technical aspect of these elements can dominate or interrupt the aesthetic or experiential view of the road-user.

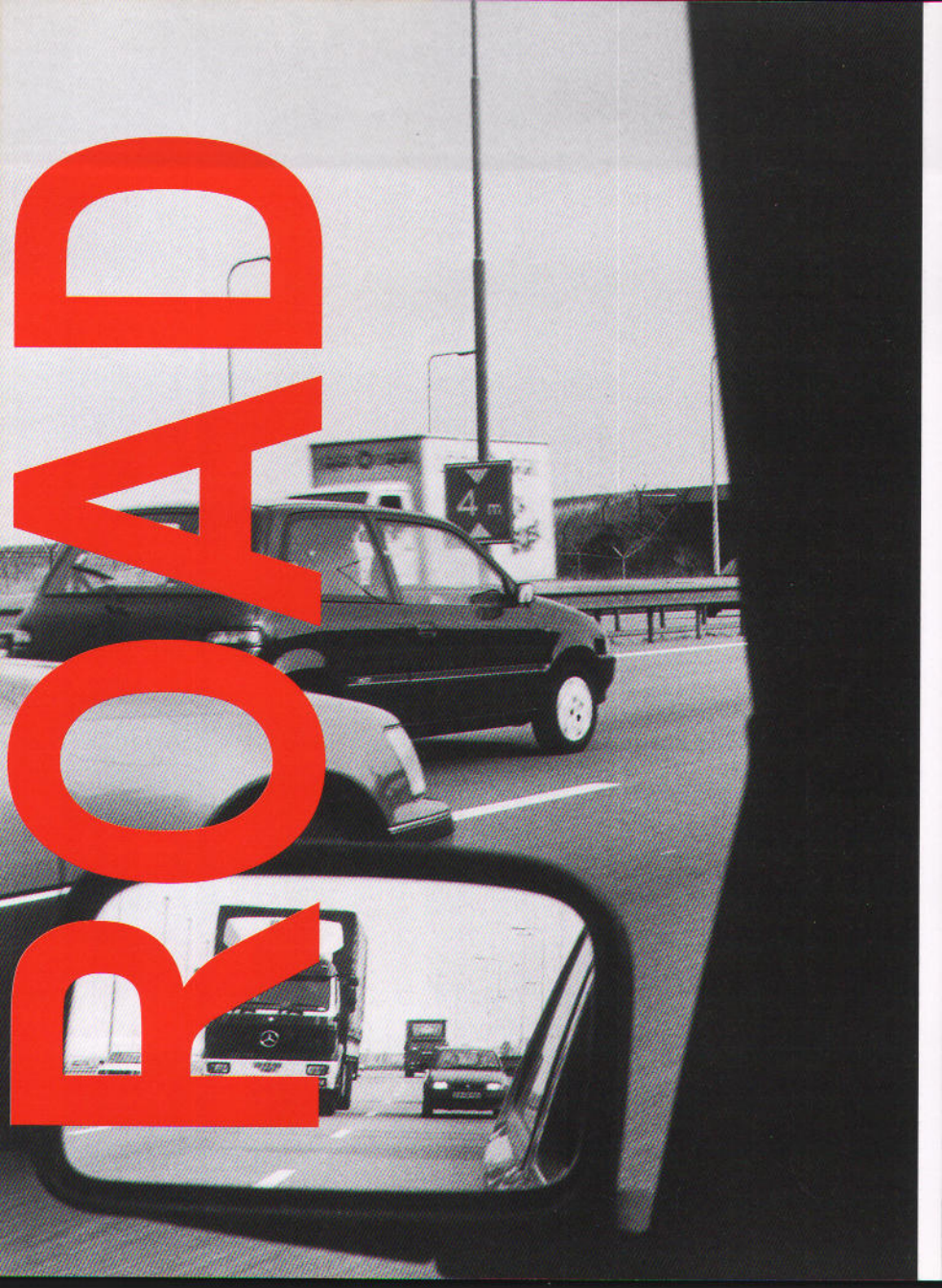


FIELD

The field is the area that lies beyond the verge, or the road if the area is not influenced by policies consequent from the motorway. The field is not only the 'middle distance' but reaches as far as the horizon.

Business, grass and crops, greenhouses, housing, under construction and water are all programmes that lie in the field. These all represent the context. The proportional representation of these programmes and sometimes the dominance of verge elements indicate that the context is not always clear for the roaduser.

Footnote - the 4th Spatial Condition: Further to the 3 spatial conditions of road, verge and field, one further spatial condition must be recognised as a vital part of the roaduser's experience - the car itself. The car has been described as a domestic satellite, a personal cocoon, a status symbol. It performs as a mobile private space within the public environment of the other spatial conditions.





THE ROAD AS A DESIGN TASK

A large proportion of the roadusers' focus is concentrated on the road itself, thanks to the driving task. For this reason, and because the motorway is the responsibility of a single organisation, the Rijkswaterstaat, the road has huge potential as both a realisable and effective design element.

DESIGN STRATEGIES

Road Surface

This is an area under going intense research by the RWS at present. Silent roads, adhesive roads and sustainable roads are all being developed. This sub-chapter focuses on the marking and decoration of the road surface as a means of communication with the road-user.

Road Form

A roadscape of flyovers, underpasses, tunnels and bridges can all present the roaduser with an exciting topography that can be entirely divorced from the surrounding context. Road Form concentrates on the spatial organisation of speed and the relationship between the global, long distance motorway and the local condition.

Road Building

The road as a spatial and formal element has the potential to house more than just vehicles; road buildings, parks, lakes could be placed above, below, between and inside the road itself.

As well as creating new physical and visual relationships for the roaduser there is also an opportunity to enhance the programmatic role of the road. Shopping, living and recreation could all become a part of being on the motorway.

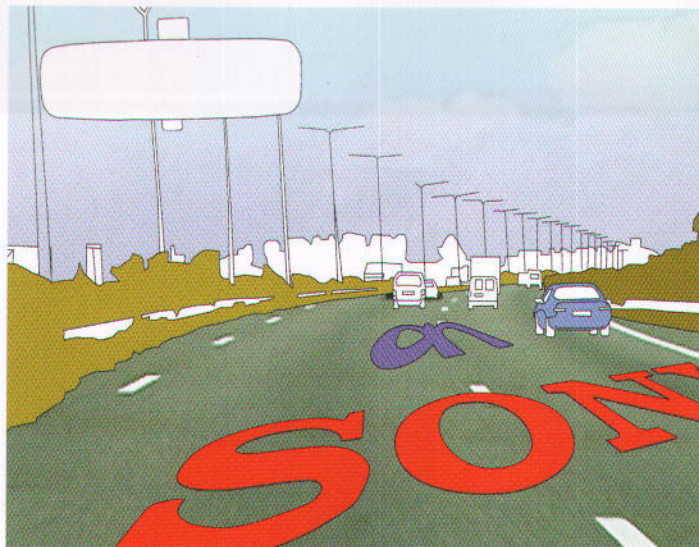
Road - Field Crossings / Links

The road often cuts the fabric of the surrounding area. By bridging or tunnelling the fabric can be stitched back together. This stitching could also be applied to the road, linking the field area with the road-user.



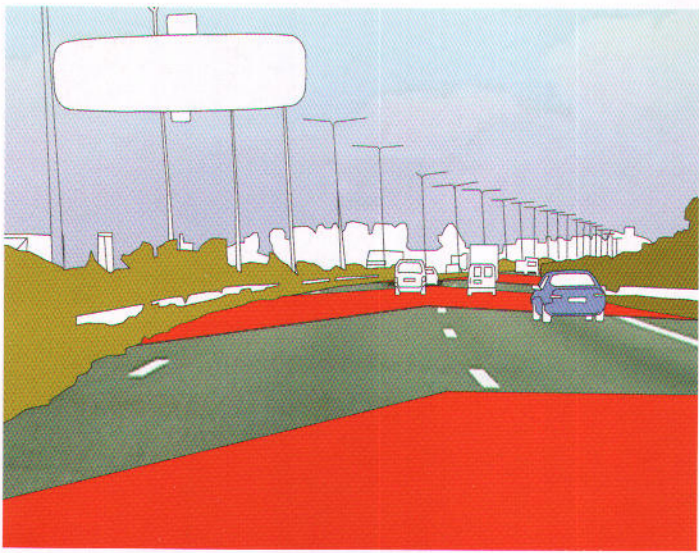
ADVERTISING

As the driver must by necessity devote full attention to the road surface, it holds enormous commercial potential as advertising space. Would it be possible to fund roads through advertising?



MARKING

The road surface can be painted to mark significant stretches or parts of the road.

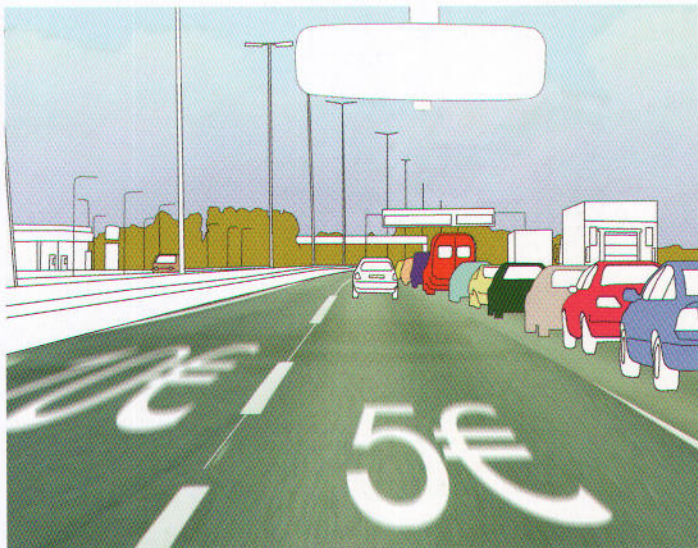


IDENTITY

For short journey road users it is possible to give the road a recognisable identity by marking the road with continuous elements. This will distinguish the road from other roads. Note the Yellow Brick Road from 'The Wizard of Oz'.

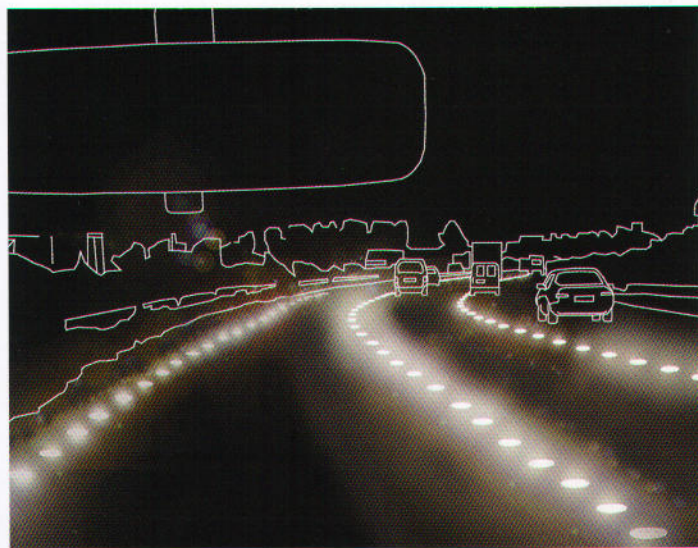


NOTE: MATERIAL - RWS is developing materials that combat noise created by traffic. This will reduce the necessity for soundcreens. Materials can be used in other ways. An artist in Zeeland used 'ribs' on the road that create the rhythm of the Dutch national anthem when driven across at a constant speed



PAID LANES

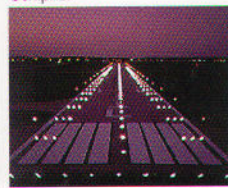
A proposed RWS traffic congestion policy is to designate certain lanes as toll lanes. These lanes could be reserved and paid for in advance by 'economically pressing' traffic. The higher cost would then guarantee less traffic on these lanes resulting in a reduced estimated journey time.*

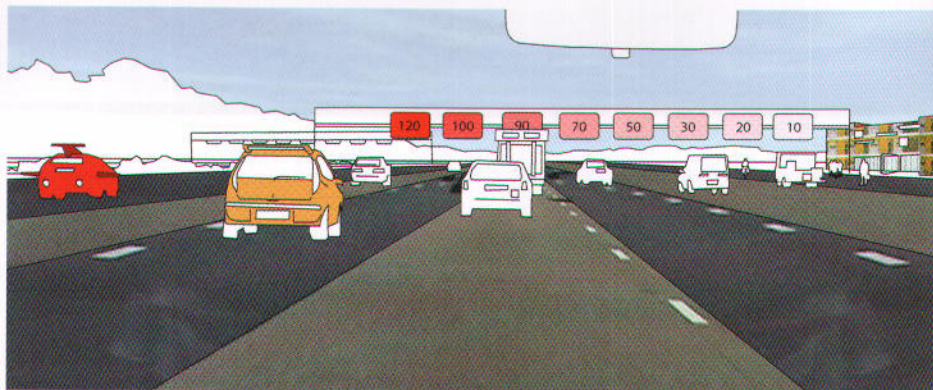


LIGHTING

The roadsurface can also have another dimension at night time. Lighting on the road can be used for navigation between lanes or towards junctions. Consider the way in which airport runways use lighting to guide planes. Could this result in a reduction of light polluting and visually interruptive overhead lighting?

Schiphol



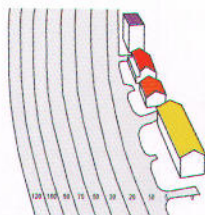


MULTI LANES

The notion of adding lanes* can be taken further by designing a road of lanes that vary in speed to create a transition from the slow speed of the local field condition to the fast speed of the motorway. The verge becomes accessible

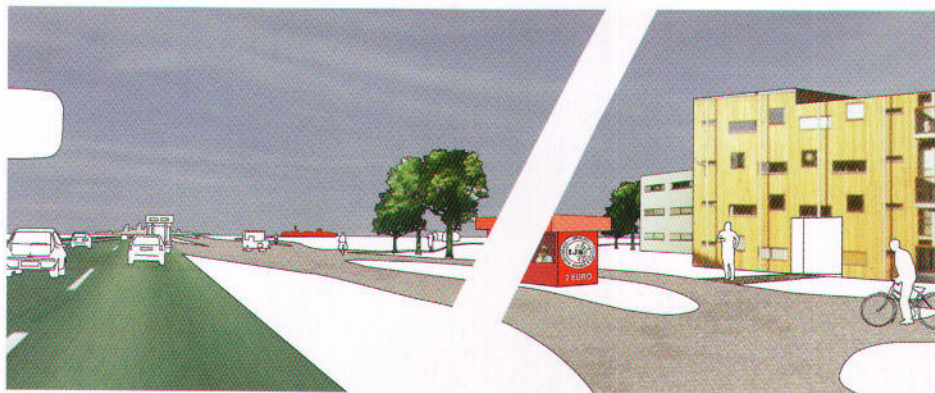
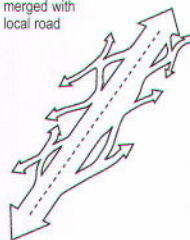
GLOBAL MOTORWAY MERGED WITH LOCAL

A variation: the motorway is merged horizontally with the local network via 'sliding junctions' - a new relationship between systems is created.

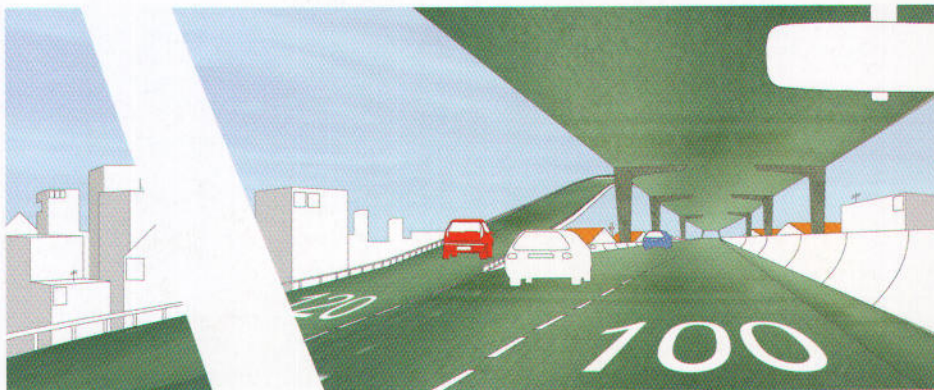


multi lanes

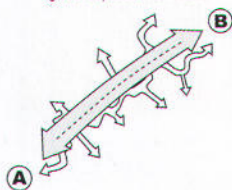
motorway merged with local road



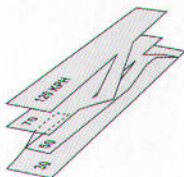
* HARD INFO - Responsibilities, Regulations, Policies, SOFT INFO - lanes



global separated from local



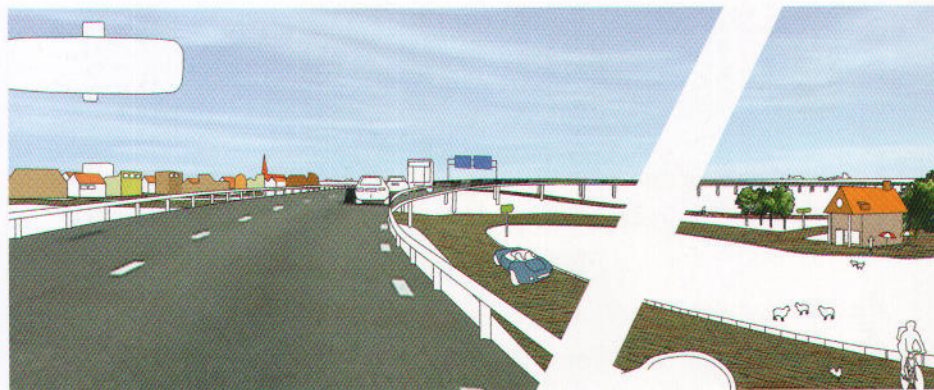
stacked lanes

**STACKED LANES**

fast flow on the top, slow flow on the bottom - the verge is eliminated, the organisation of speed creates new spatial relationships.

GLOBAL SEPARATED FROM LOCAL

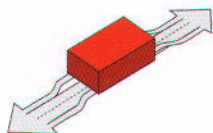
The original concept for the motorway - a global network*. The multi-junction Dutch motorway goes against this concept. This strategy reverts back to the original concept by separating the networks vertically.



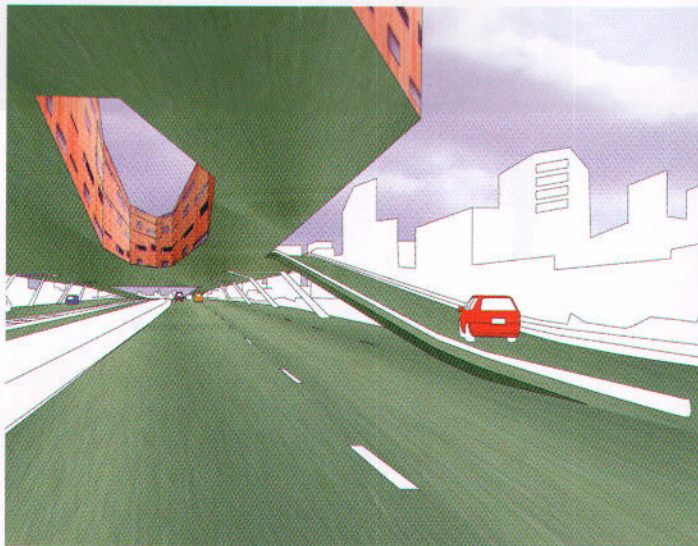
* The first plans for motorways appeared with Hitler's Third Reich - Following the technological improvements made to the automobile that outstripped the capacity of roads of the day, 'Autobahns' were intended to facilitate fast transport across Germany.

**ABOVE**

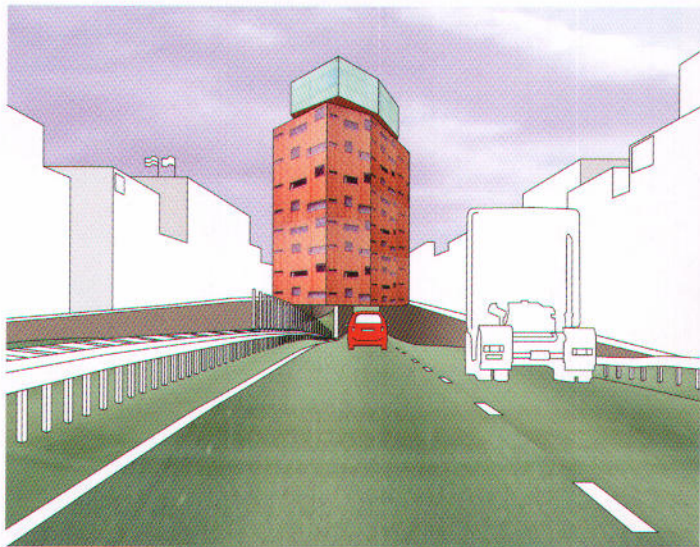
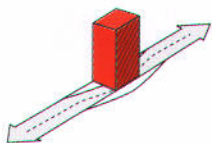
The road covers countless km² of NL - imagine how many buildings could be accommodated above this space. This design is perhaps best in a high density situation where land is expensive, the verge area could be used as a ramp.



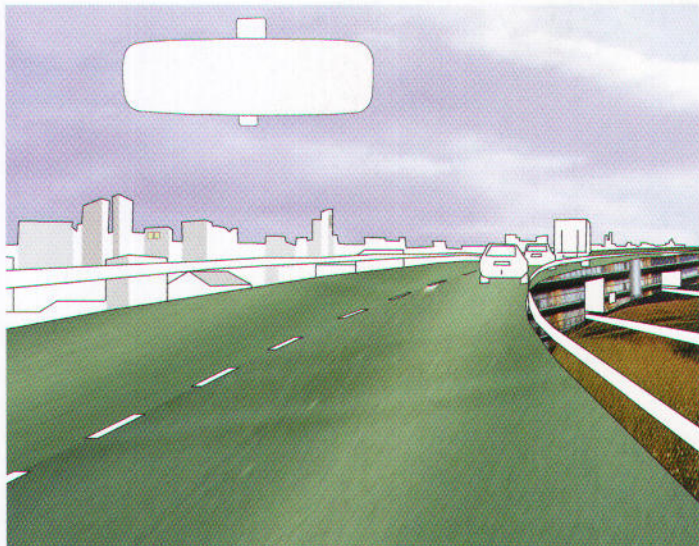
The strategy can also be a cue for a re-thinking of today's 'road buildings' such as servicestations. Presently servicestations usually occupy an area that could be used for the field. This function 'belongs' to the road and could be physically accomodated by the road.

**ABOVE**

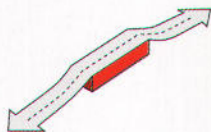
Compared to the design above, the road form itself dips to create space for the building, the road and the building together form a tunnel, the building can relate to its surrounding neighbours on the existing ground level.



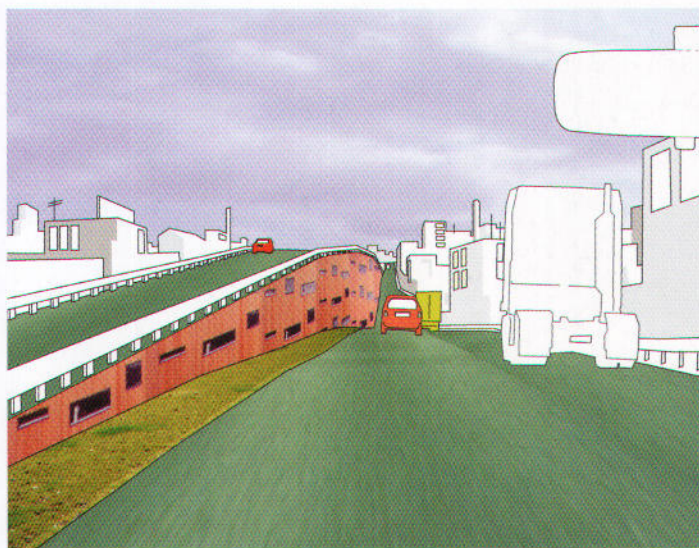
An existing 'Above Road Building': Malletoren, Utrechtse Baan, Den Haag



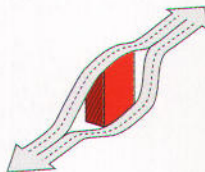
BELOW
Lifting the road gives space for
e.g. architecture under the
road.



Tenerife



ONE SIDE
Lifting one side of the road
creates space for a building -
this has an impact on road
form and enables the roaduser
to see directly into the building.



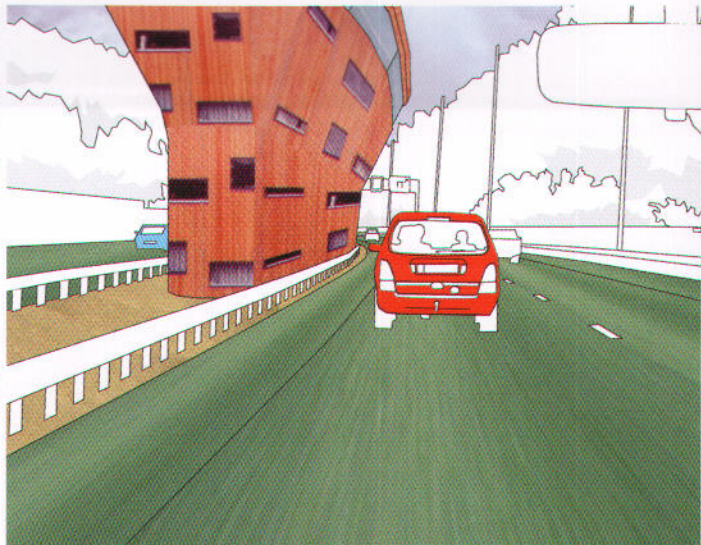
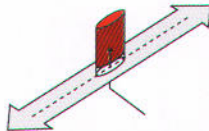
Tokyo





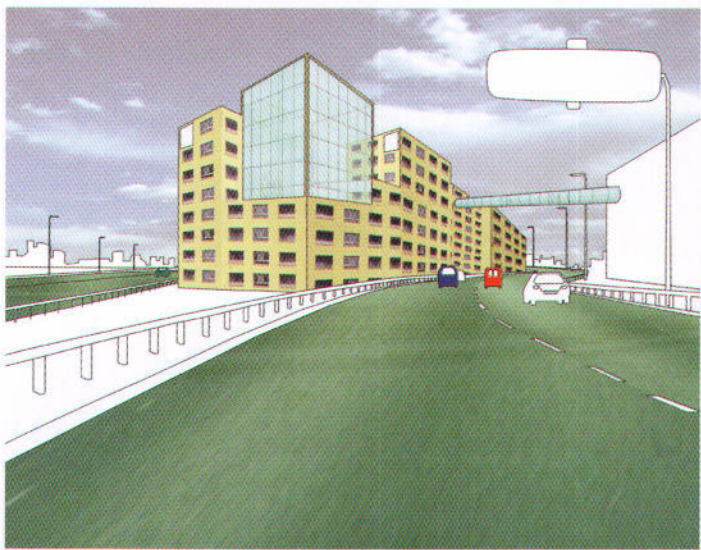
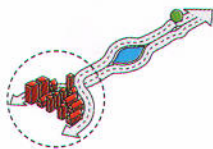
MIDDLE OF THE ROAD small 2,3,4

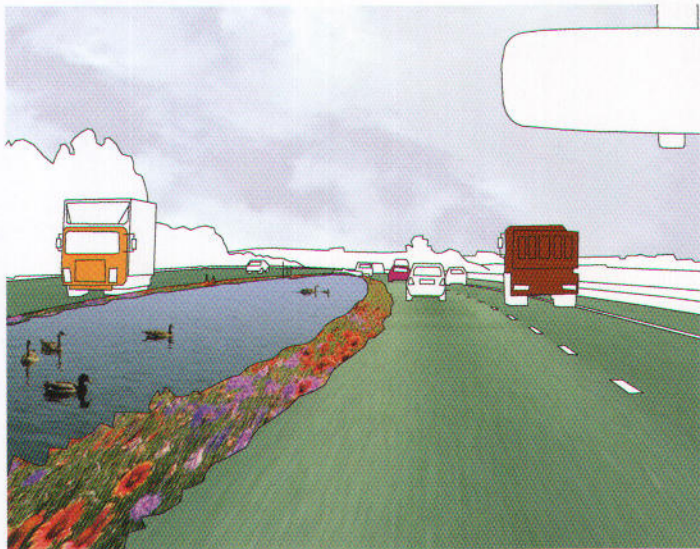
The central reservation is sometimes big enough to house a small scale building or a line of trees. How about taking this idea further by progressing to the medium and large scale? (At each scale we can raise the question of accessibility - the middle of the road could be accessed from the field via a tunnel, or at a larger scale perhaps also by the road itself.) These could create recognition points along the road or perhaps be distributed to create a rhythm on different scales and distances.



MIDDLE OF THE ROAD large

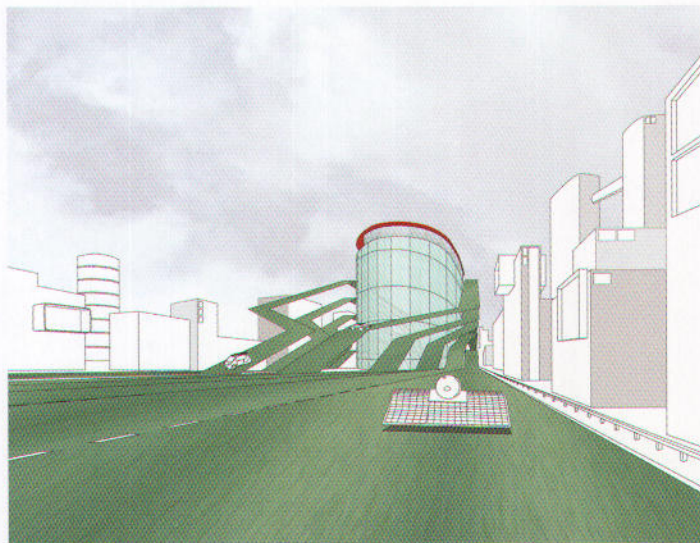
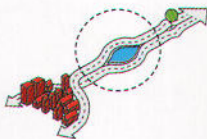
A group of buildings or landscape parks can be situated in a large central reservation area of the road. Connections to the surrounding city could be made by tunnel or bridge.





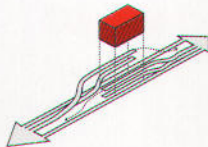
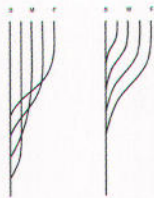
MIDDLE OF THE ROAD medium

Lakes, water or trees can also be added to the rhythm of the road.



MIDDLE OF THE ROAD

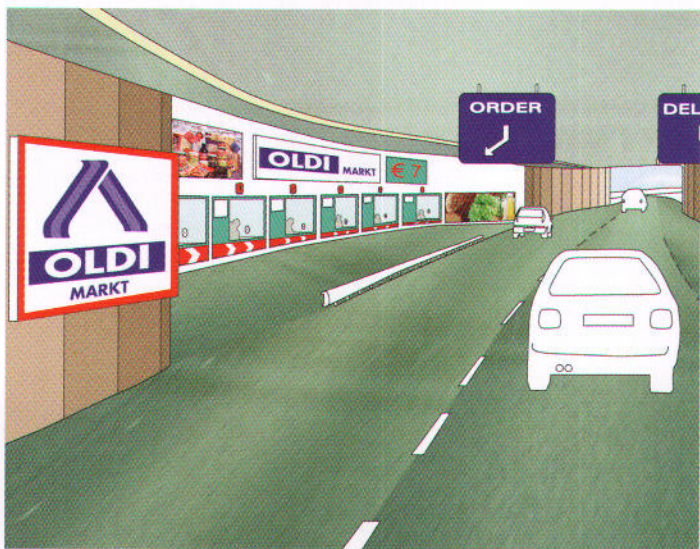
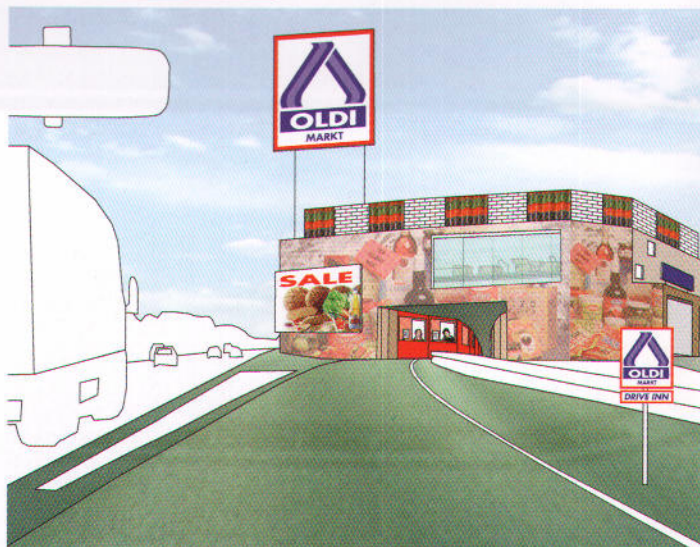
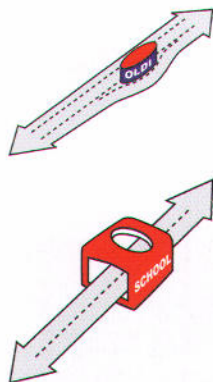
A5 lane motorway occupies 17,5m in width - what are the possibilities for stacking the lanes and creating a building within this space? The building could be accessed from the slow lane (and from the field if the slow lane is lifted)





BUILDING PROGRAMMES

The road is becoming a public space - a place to be rather than simply a tool to go from A to B. With a society that is increasingly mobile, the road has the possibility to become a programmatic urban element in itself.



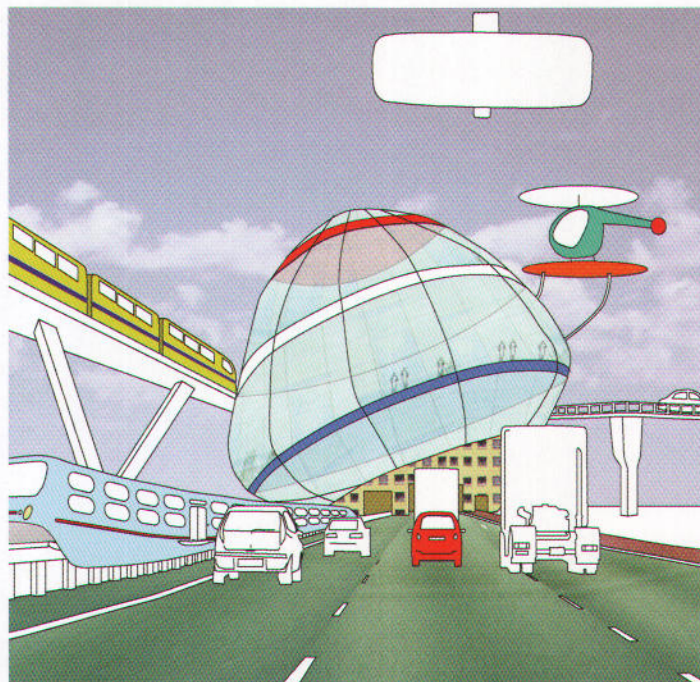
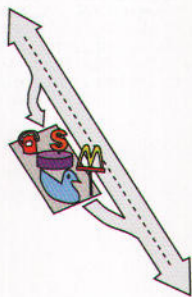
?-TYP
third prize
competition 'Motorwayhome' by
Maxwan Architecture and Urbanists,
Rotterdam



see SOFT INFO - Interior Access, Servicestations - there are 11% pause exits, this number could rise with this strategy and the types of services available will also increase.



PROGRAMME COMBINES
WITH THE ROAD



TRANSFERIUM CONNECTS
INFRASTRUCTURAL FLOWS

The road is part of a wider network of transport - Fluent transition between the various modalities will create a more natural and smooth use of this network - Perhaps the use of the car will become related only to certain types or stages of journey.

Amsterdam Arena

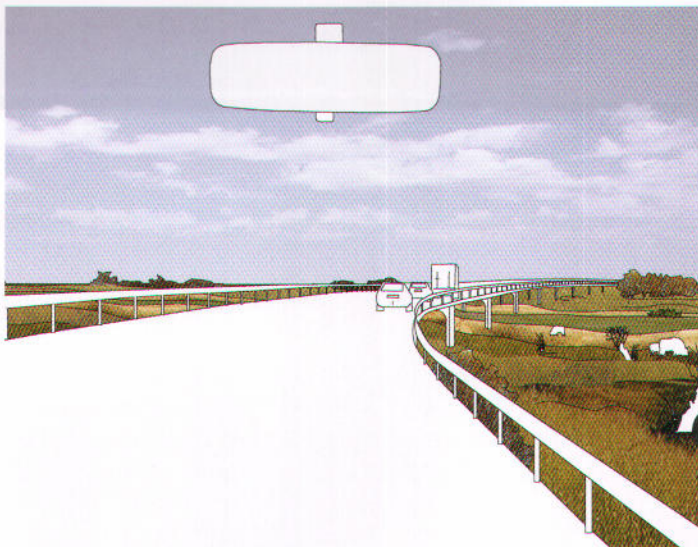




The road as an element often slices the surrounding field area in two, creating disruption in the urban fabric and also verge areas and loss of a relationship with the context for the roaduser. These strategies show ways in which to repair this damage.

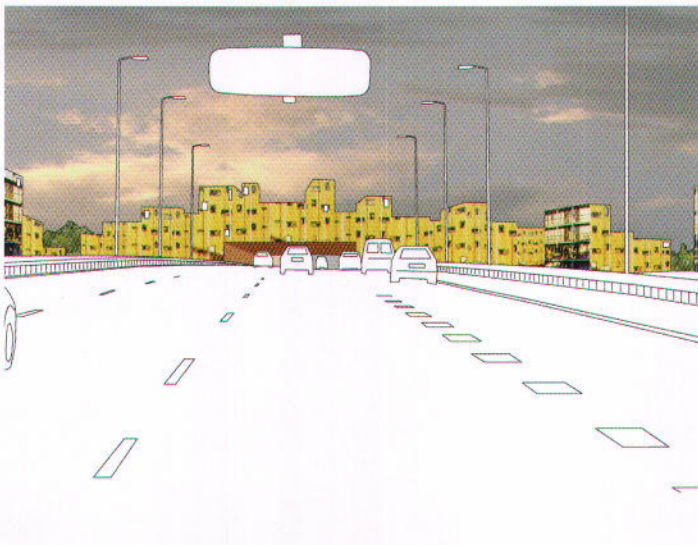
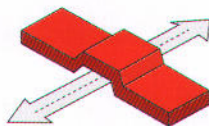
UNDER

the field continues under the road



OVER

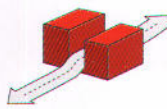
The field reacts on the road - the bridge represents the programme of the field.

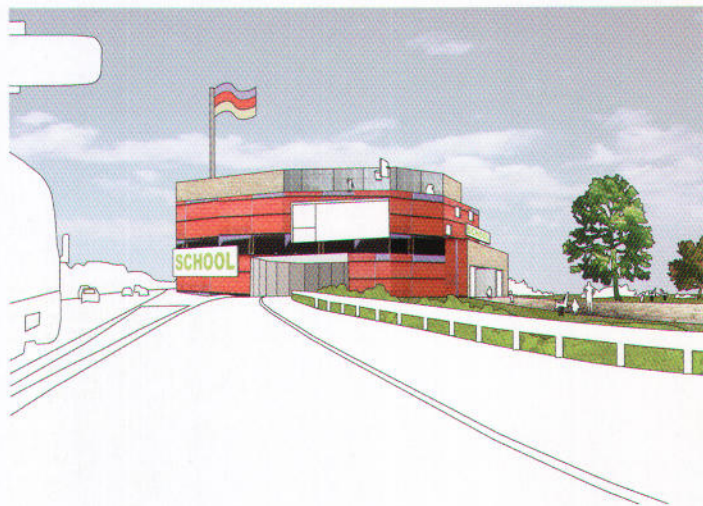


Nationale Nederlanden,
Utrechtse baan, Den Haag
Source: RWS



NOTE field connecting
living- areas can go under
the road aswell >
< same as the wellknown
eco-ducts

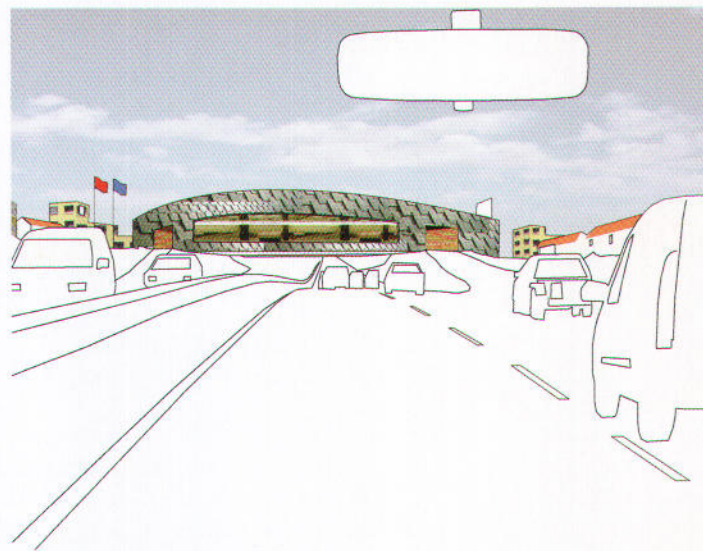
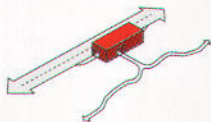




The crossings are made accessible by car from the motorway.

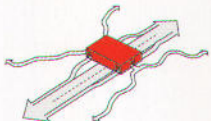
CONNECT

Building next to the road as connection with the field.



CONNECT

Lifting the building and use verge as ramp-on/off. Building functions as a connector with the field







THE VERGE AS A DESIGN TASK

The verge is a no-man's land, a 'non place'. It often seems unprogrammed, left open and unused. Or if it is programmed it appears to be done so with little regard to the driver's journey experience.

However the verge plays a crucial role in the relationship between the road and the field. From the driver's perspective the verge has the potential to eliminate that relationship altogether or indeed to enhance it.

The experience of the verge is also great as it falls within a large part of the road-user's perspective.

Furthermore the verge often lies within the ownership of RWS. The design potential for the verge is therefore strong.

DESIGN STRATEGIES

Two basic strategies are proposed for the spatial treatment of the verge:

Purge the verge

The verge is eliminated altogether by bringing the field into direct contact with the road. The experience of the field is therefore intensified.

Identify the verge

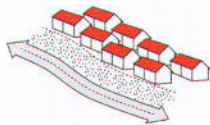
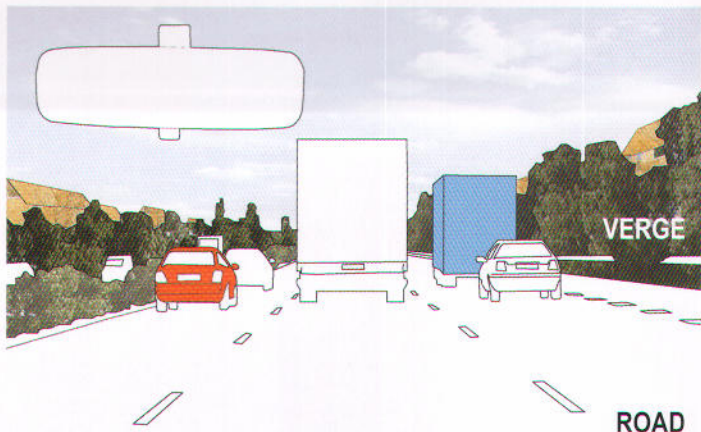
The verge is given it's own identity by introducing new programmes, independent of the road and the field.

Further to these strategies the design potential of three existing verge elements that have an effect on the roadusers' experience are examined; servicestations, planting and soundscreens.

PURGE THE VERGE

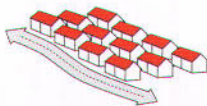
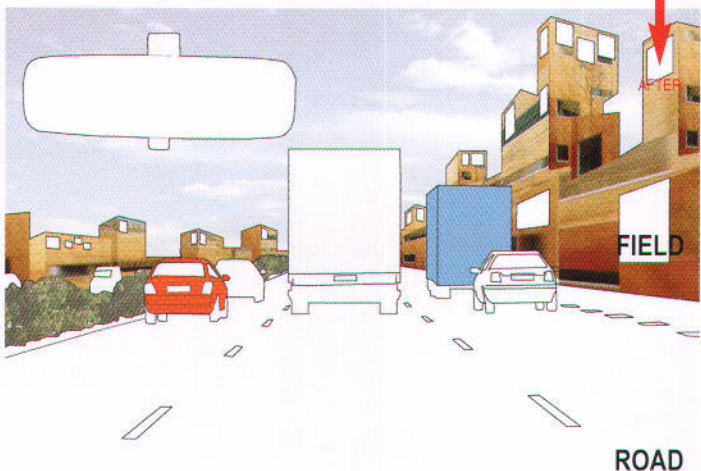
'Non-place' verge areas and elements are eliminated; the 'field' area then comes into direct contact with the road resulting in a more intense perception of the context.

This example shows the removal of 'unclear' planting to reveal the housing that is situated behind*. New housing can then be built in place of the planting.



Rules and policies regarding the effects of the motorway on housing exist**. New housing typologies are therefore needed.

Above is a reference project: housing combined with sound dampening along a road in the East of the Netherlands.

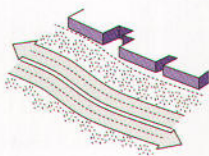
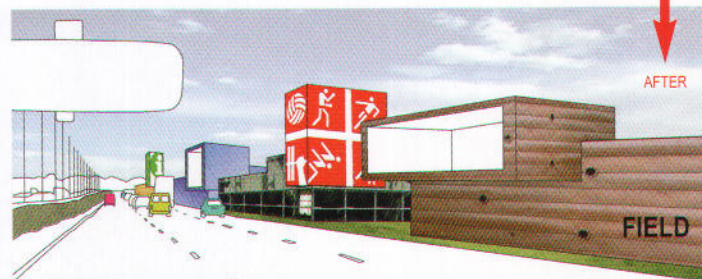
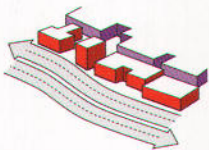


* see Soft Info - Programme: Scenography - Of the Right cam view housing accounts for 2.5% of what is seen - this seems to be unrepresentative of the Dutch context.

** see 3 Spatial Conditions - Verge

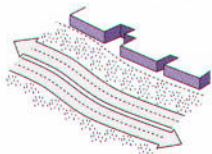
PURGE THE VERGE

Here the empty space that often occurs between the road and business parks is eliminated by placing the business area directly adjacent to the road.

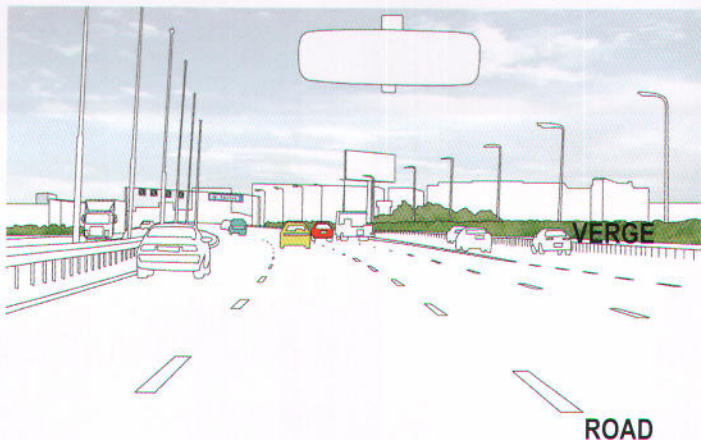
**ROAD****BEFORE****AFTER****FIELD****ROAD**

IDENTIFY THE VERGE

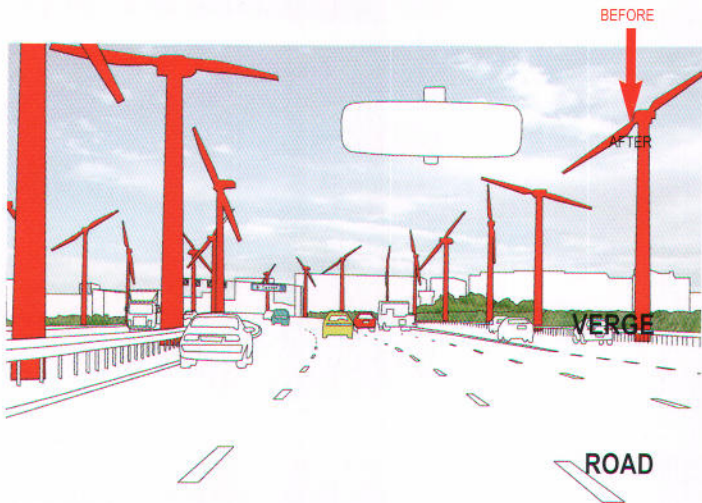
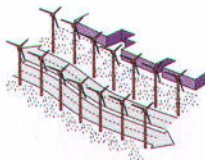
The verge area has the potential of housing new programmes that can create a new identity along certain stretches of the road.



'Angel of the North'
Gateshead, United Kingdom.



The 'Dutch verge': windmills
show the characteristics of a
windy, open land.



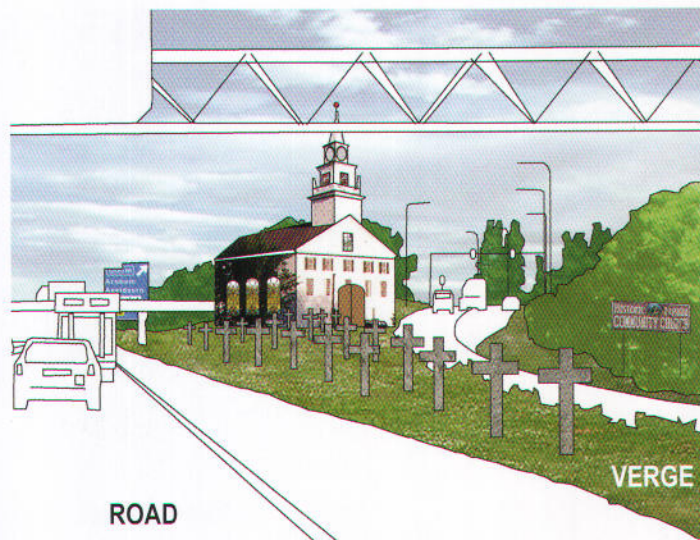


IDENTIFY THE VERGE

The junctions are mostly simply green or empty.*

Usage of special planting, or new programmes can distinguish one junction from another and make them recognisable.

This is an example of a junction planted with poppies; the 'Poppy Junction'.



The junction as cemetery - perhaps an extreme example but it shows the possibilities of new programme and new experiences along the motorway.

cemetery near the 2nd Beneluxtunnel, Pernis

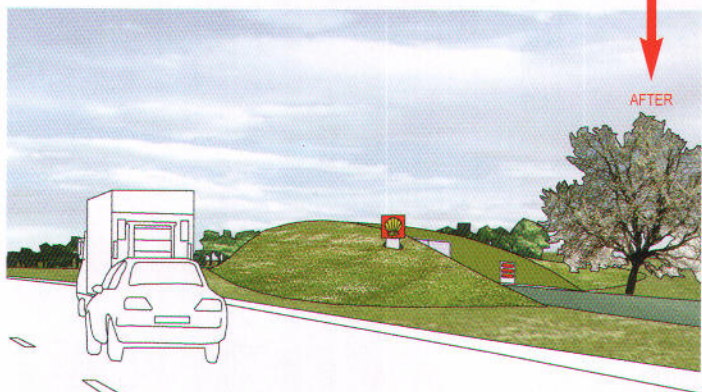
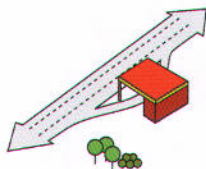


* see Soft Info - Programme: Scenography - 'Junction Green' accounts for 12.5% of Right/Left Cam view. This 'non-place' area is an ideal opportunity for 'Identify the Verge'.



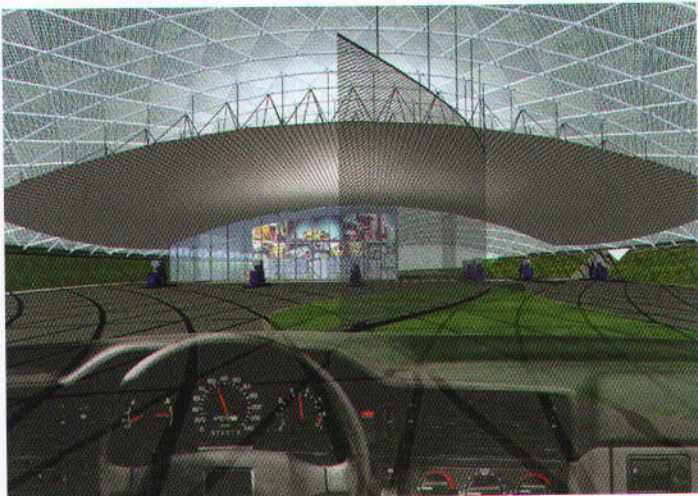
Servicestations appear along the motorway according to functional rules*. Often their positioning can seem very incongruous with the surroundings.

One strategy is to fit the servicestations into the landscape, the appearance of the field and verge decide in what form the servicestations will appear.



* see Hard Info - Responsibilities, Regulations, Policies

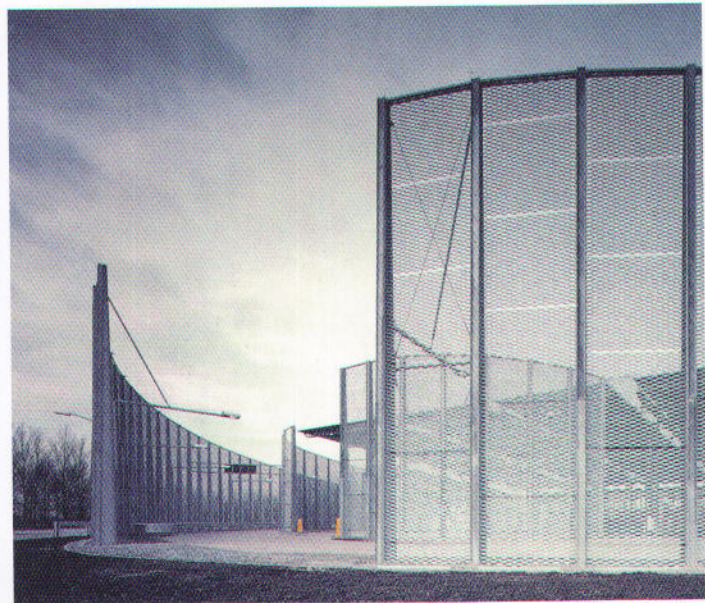
see Soft Info - Servicestations - Number of servicestations: In the Outer ring: 8 - In the Inner ring: 10



A second strategy is progressing the shape of service-stations, by moving away from the universal sheds. By designing a specific form, color, material, service-stations will develop to distinguishable places of their own along the motorway.



FINA tankstation, Froyennes
by Philippe Samyn.



FINA tankstation, Houten
by Philippe Samyn.

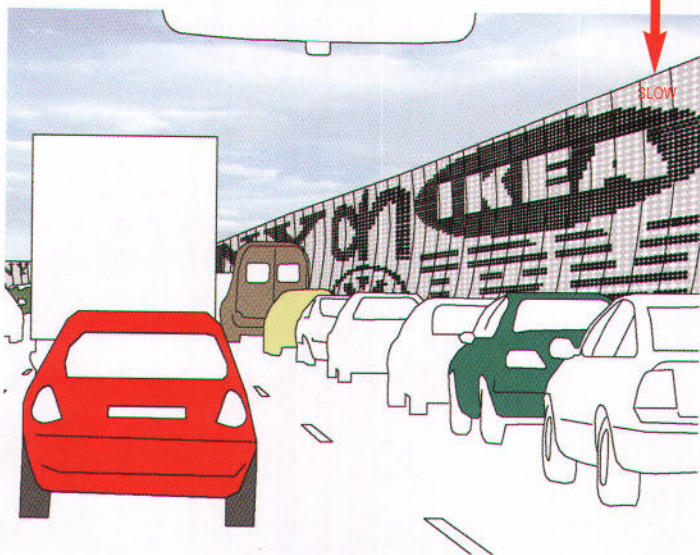
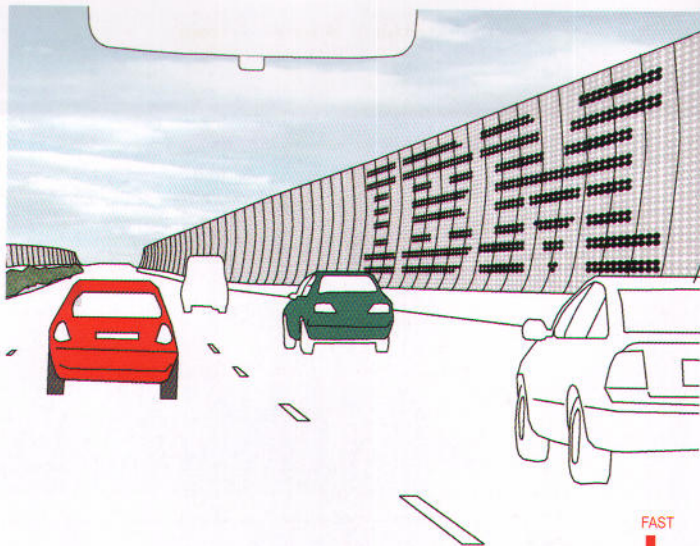


'Built wall' accounts for a significant proportion of what the roaduser sees along the motorway*. One strategy is to eliminate them altogether (see 'Purge the Verge'). However the soundscreen can be addressed as a design element itself.

DIGITAL INFORMATION

This strategy shows the soundscreen as a device for displaying information, in this case advertising.

The speed of the traffic becomes a critical factor in deciding the size and density of the information displayed. When driving at 120 km/h less information will appear as only large and strong info can be perceived, during the traffic-jams the soundscreens will be full as there is time to read more info and more attention is given to the verge area.



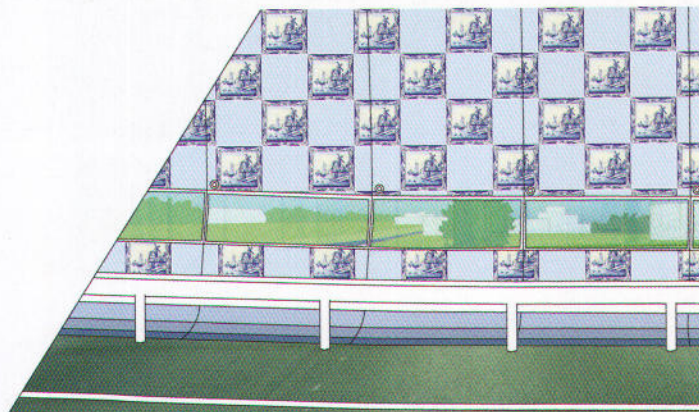
* see see Soft Info - Programme: Scenography - Built wall accounts for 10.8% of the Right Cam view.



MODULAR

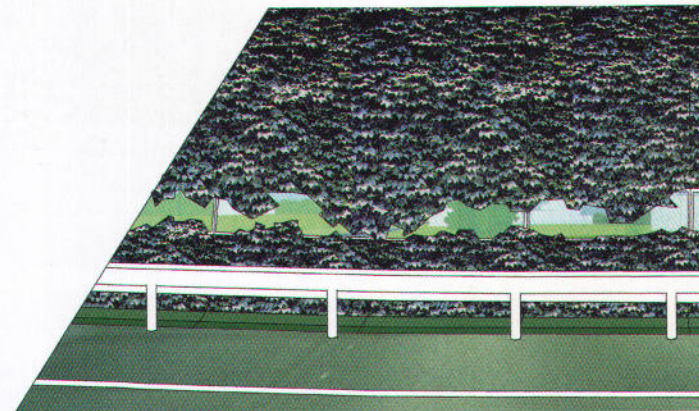
A uniform, modular soundscreen will make it, as an element, a part of the universal language of the motorway itself.

The image shown is from the modular soundscreen project being developed by the RWS.



SITE SPECIFIC

The characteristics of the area that is being screened can be represented by designing soundscreens specific to the place. Delft, for example, will get a soundscreen of Delft Blue tiles.



GREEN CONTEXT

When using planting for soundscreens, the seasonal aspect will create variation over the year.

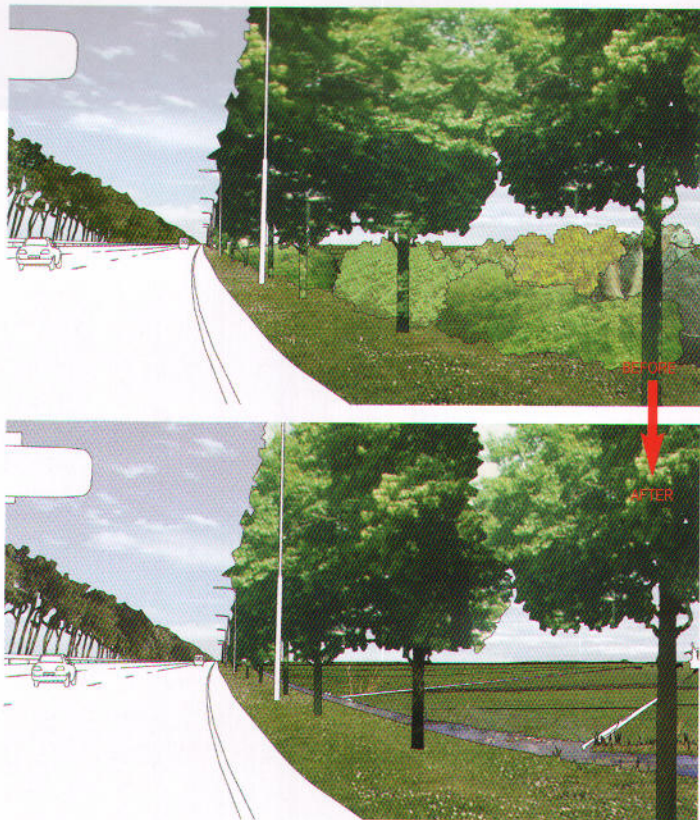
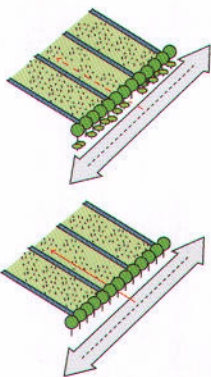
The motorway was originally seen as an element which 'scarred' the open landscape.

The use of planting was intended to 'heal' this scar and ensure a harmonious relationship between the landscape and the motorway.

The landscape has since changed dramatically and yet planting still accounts for a huge percentage of what the roaduser sees along the motorway*. There is a need to re-address planting as a design element.

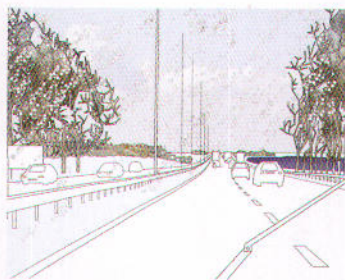
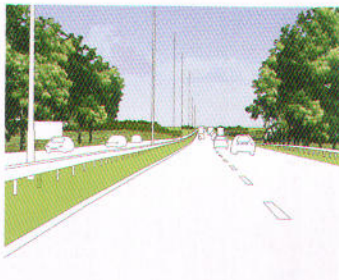
CLEAN THE VERGE

Dense, non-transparent planting hides the surrounding landscape, mis-representing the context resulting in dis-orientation and a feeling of 'non-place'. By cleaning away offending bushes and shrubs this effect will be reduced.

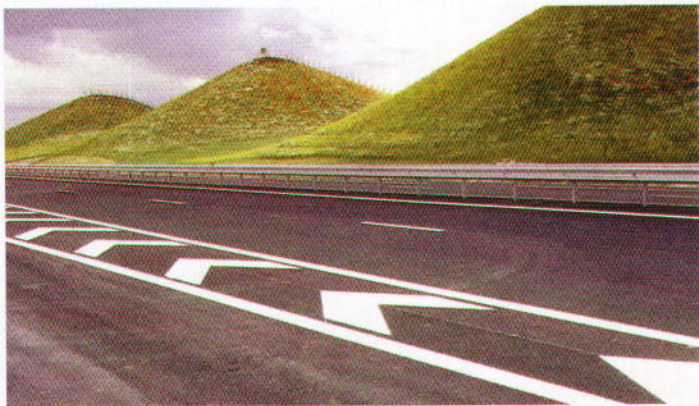


SEASONS

When using planting for identifying the verge, the aspect of time plays a crucial role - trees become transparent in winter-time, have another colour in autumn, and are full and green in spring. (dependant on species)



*see Soft Info - Programme: Scenography - Planting now accounts for 37,2% of the Right Cam view and 50,8% of the Left Cam View.



PLANTING AS IDENTITY

Planting can be a carrier of identity, it can create the atmosphere of a place. In this example the rhythm of the seasons becomes visible on the hills with varying vegetations.

Jacques Simon, Autoroute

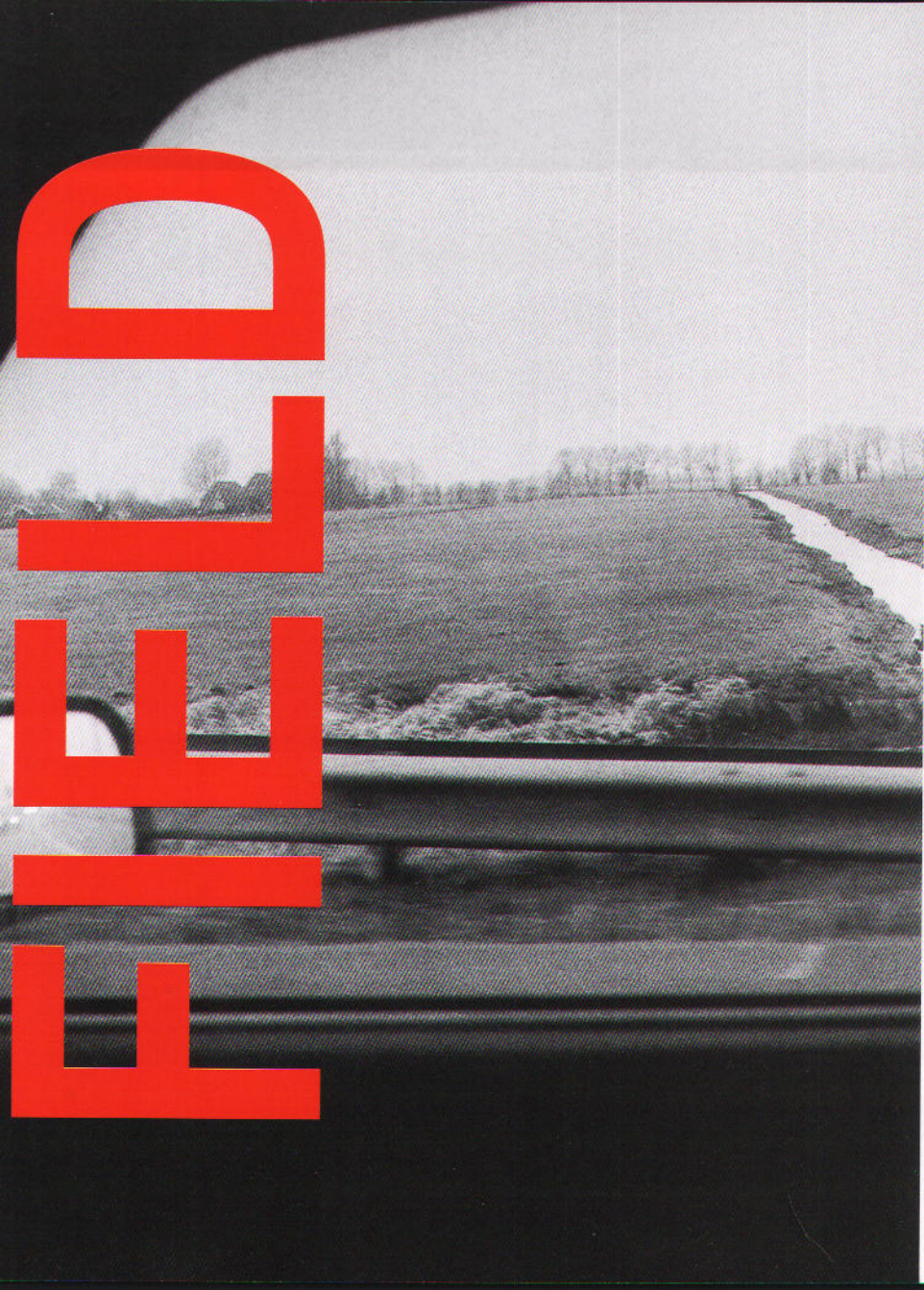


Verge with planted broom
Villechétif-Villeroy, France
Foto Michiel Veldkamp



Route designed with planting,
Avenue Pierre Mendès
Desvigne & Dalnoky, France







THE FIELD AS A DESIGN TASK

The field can lie beyond the verge or, in the absence of a verge, directly against the road. It is, in other words, the context through which the roaduser drives. The context in this case is the Randstad or Delta Metropole. When comparing motorways around the world (more or less universal in their engineering) it becomes evident that the identity of the context plays a vital role in the identity of the road.

The Delta Metropole is a network of four large cities and smaller towns that are situated in a wide, open peat landscape. The drivers' perception of this context is therefore central to creating the identity of the motorway.

As the field area lies beyond the control of the Rijkswaterstaat its' design, by definition, involves co-operation with other parties: municipalities, developers and so on. Field design calls for an integrated approach to mobility aesthetics.

DESIGN STRATEGIES

Open Landscape Panoramas

The open landscape panorama, characteristic of the traditional identity of the Delta Metropole, involves depth and length in the field. As the roaduser travels at speed the measurements of the panorama need to be large in order to be perceptible.

Urban Panoramas

An urban panorama is the view of an urban area, seen at distance, from the motorway. This view is important for the perception of and orientation within the network city. As opposed to the open panorama this type of panorama involves a height dimension. Strengthening of an urban panorama can involve developing a policy towards high rise buildings within the Delta Metropole.

Principles of Making a Panorama

Further to the wide reaching field strategies, a number of road and verge strategies can be applied to the creation of making a panorama.



PROTECTED PANORAMAS

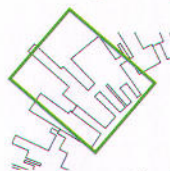
Certain panoramas can be designated as protected open fieldspaces.

Such panoramas are filmic in the sense that the field scenography unfolds without 'zooming in'. The roaduser experience is akin to the 'tracking shot' common to cinematography. The timespan of the 'tracking shot' is vital for the experience of an open panorama. This is reliant on the speed of the vehicle and the distance travelled. At the high speed of a motorway the length of the panorama therefore needs to be long.

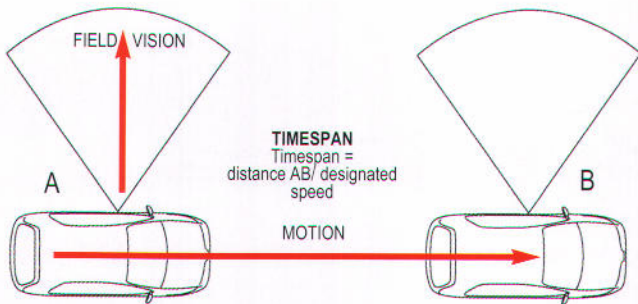


DEPTH OF FIELD

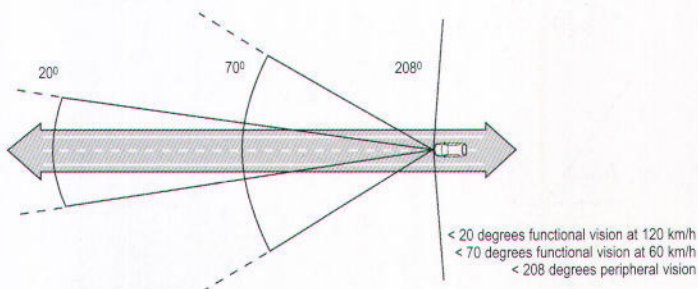
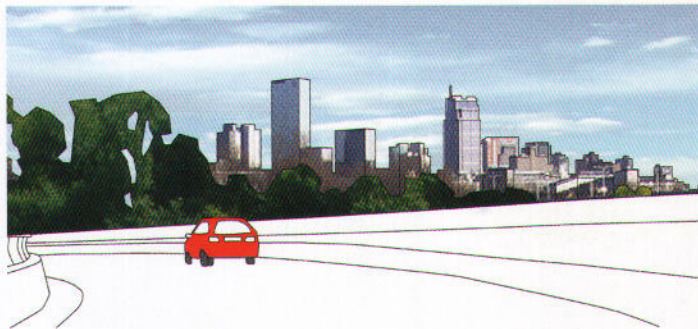
For the 'open' quality of a panorama the field must be deep (1000-2000m)*. A panorama therefore involves length and depth.



Namibia



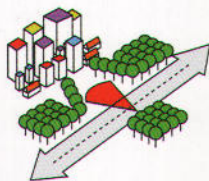
* see Soft Info - Depth of Field: category 1000m-2000m accounts for 20.5% of the Right Cam View, 13% of Left Cam View



URBAN PANORAMAS

The visibility of an urban panorama can be created firstly by a strong city skyline. A clustering of high-rise buildings is the most immediate form of a modern city skyline, such as that of Rotterdam. A skyline however should relate to the identity of the city. Delft, for example, is famous for its skyline of scattered cathedral spires. Therefore a policy towards highrise is essential in creating a city skyline.

Secondly visibility lines from the road are important. Whereas an open panorama is concerned with an 'atmosphere', urban panoramas relate to orientation and thus more to the driving task. The width of the 'functional' vision of a driver depends on the speed being travelled. At a high speed the urban panorama must occur in the line of the road. This can therefore have a consequence on route planning and the removal of visibility obstructions.



skyline Rotterdam, taken from Schieven

Highrise cluster - Chicago

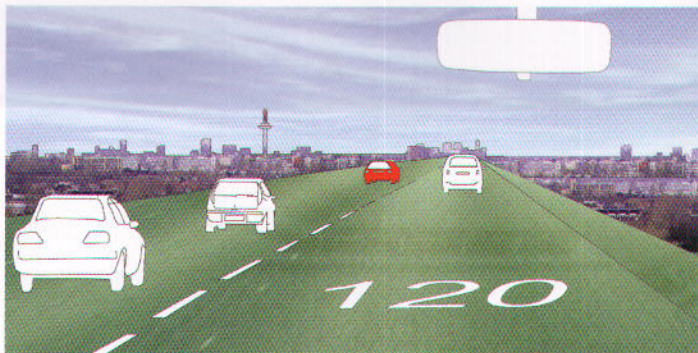
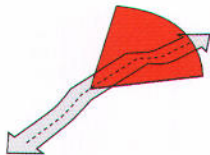




Further to the wide reaching field strategies panoramas can also be enhanced by road and verge strategies.

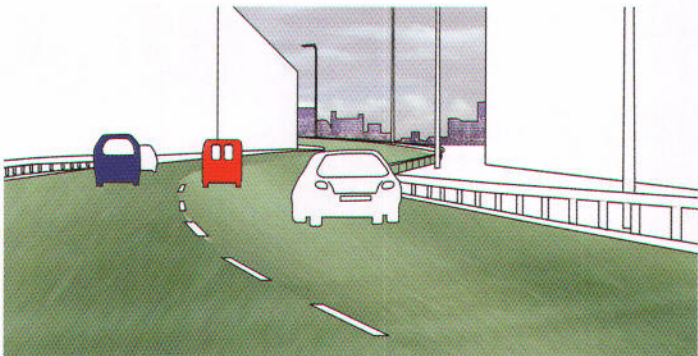
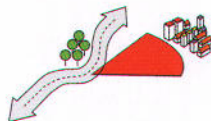
ROAD HIGH

Lifting the road up creates a wider view on the city or landscape.



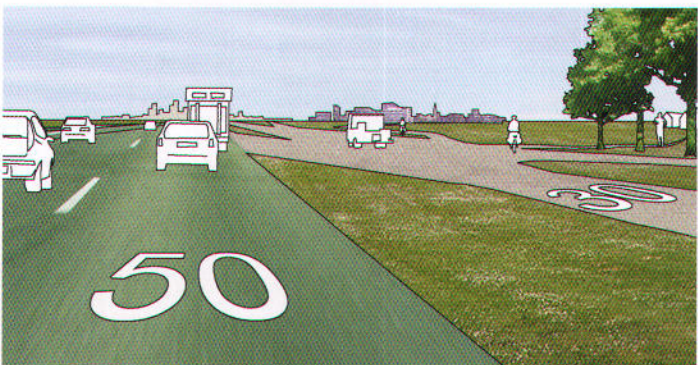
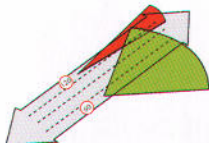
ROAD BENDING

Bending the road; the road leads for a short time in a different direction leading the focus of the driver towards a skyline.



DIFFERENT SPEED

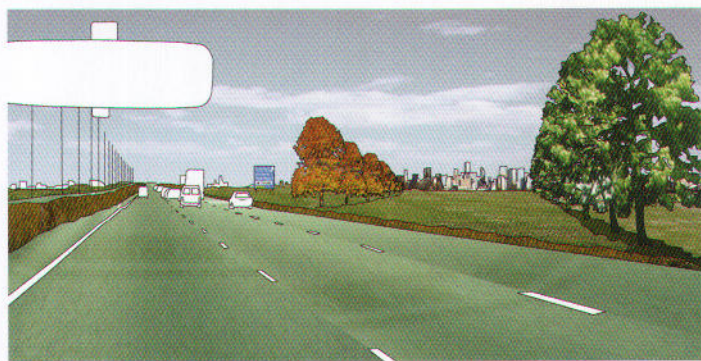
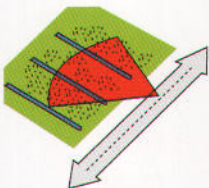
Changing the speed of the traffic will give the roadusers a wider view thus enhancing the effect of a panorama.





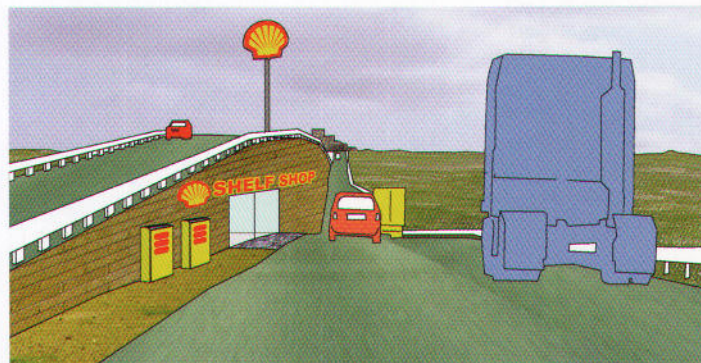
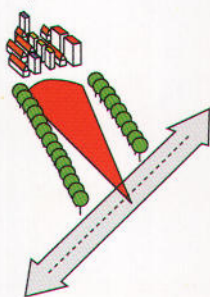
CLEAN THE VERGE

Clear the verge and field; a typical Dutch open landscape becomes visible.



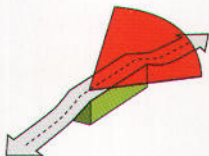
CREATE SIGHTLINES

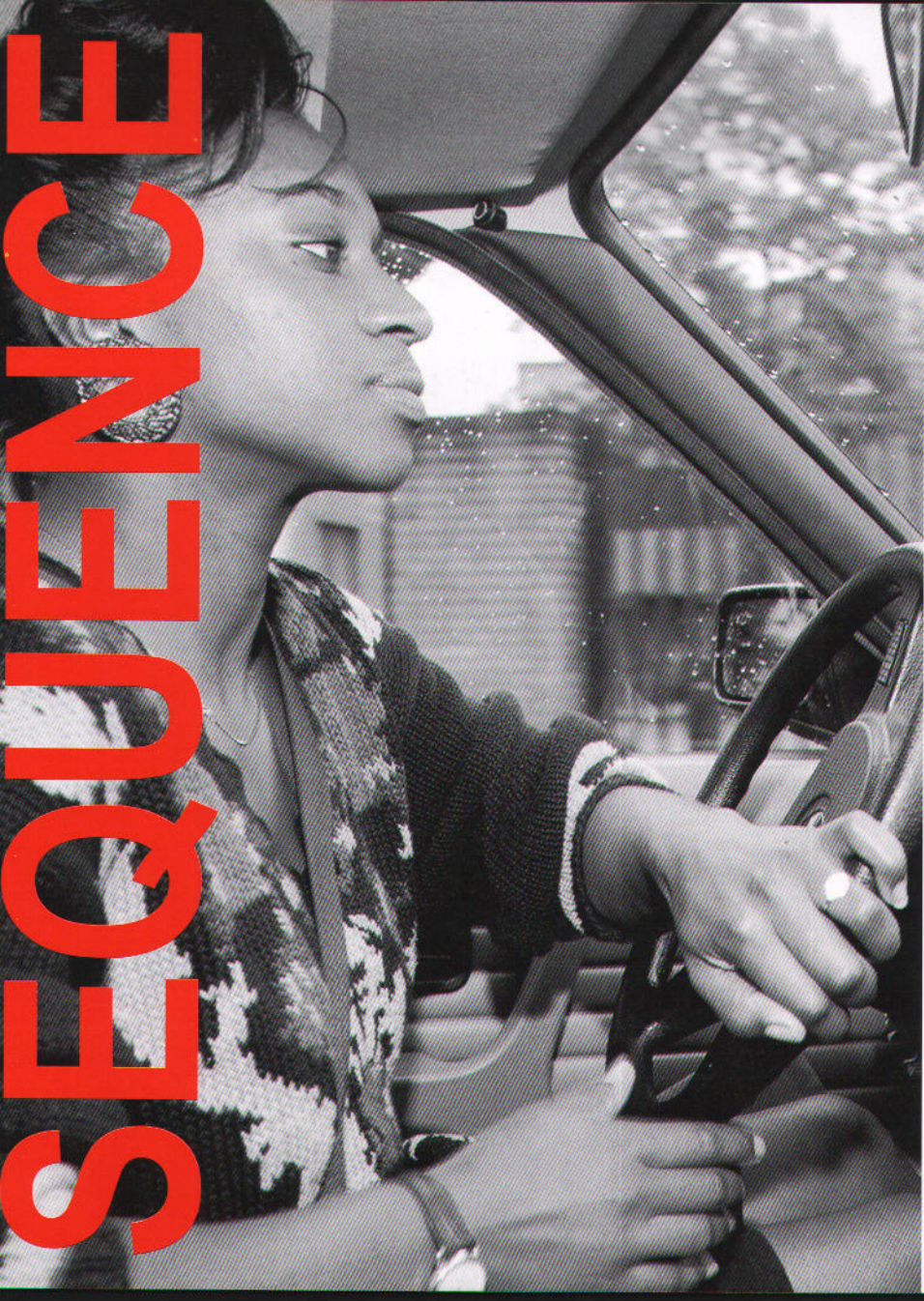
Create sightlines, by using for example rows of trees.



SERVICESTATIONS

Combine two different design strategies - lift the road up and use the space underneath for a service station. The lifting of the road creates a wider view and simultaneously hides an obstructive service station.





SEQUENCE

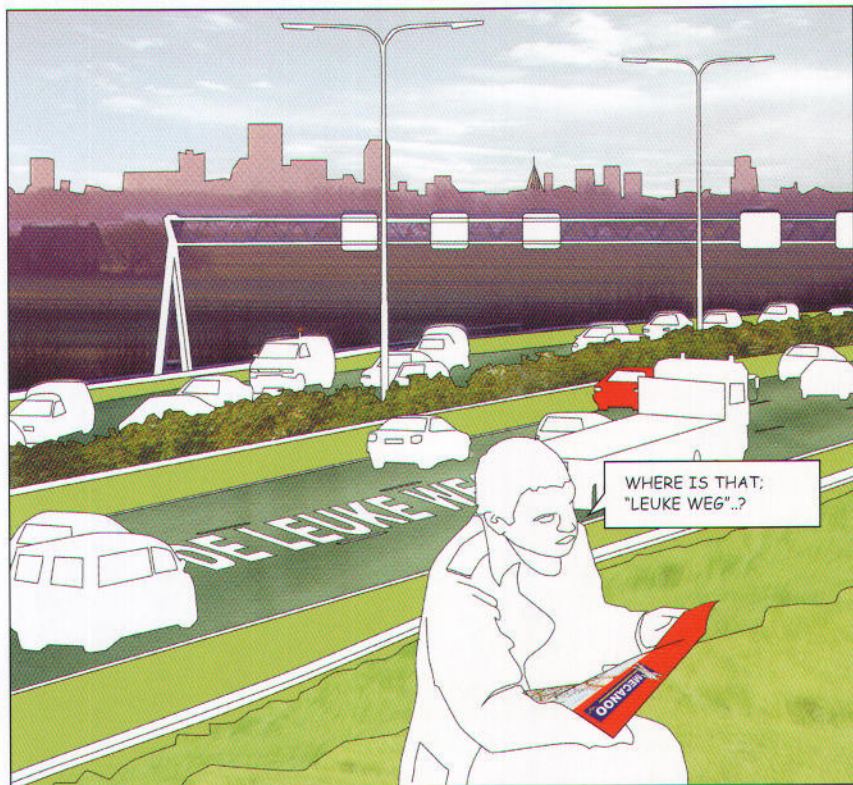


And Finally...

The design proposals are gathered together to make a road. The following cartoon strip presents the interaction between three roadusers' and this 'road of the future'...

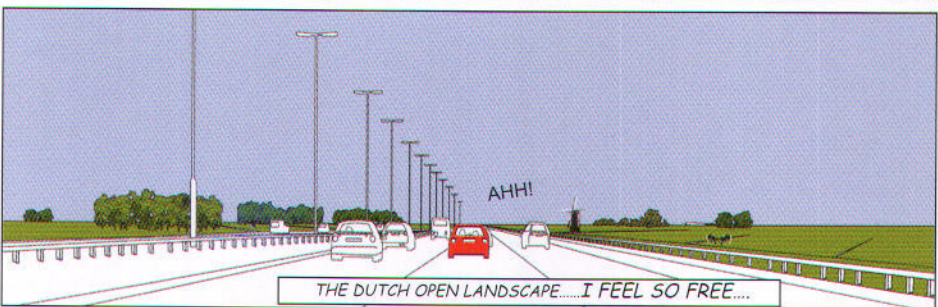
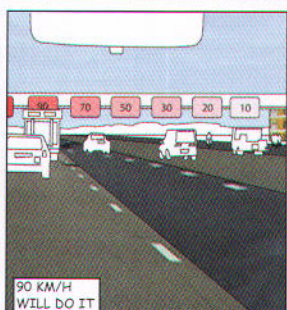
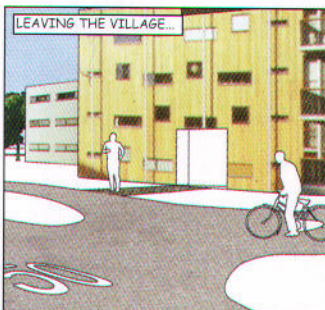
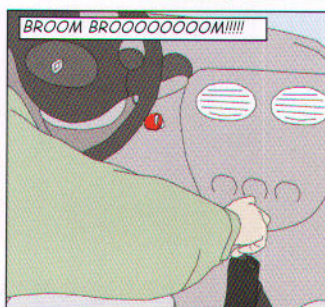
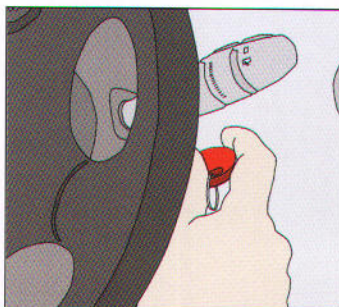
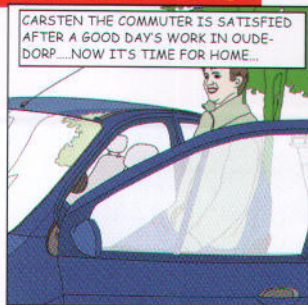


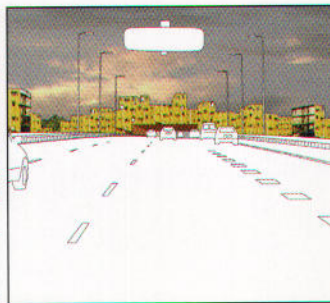
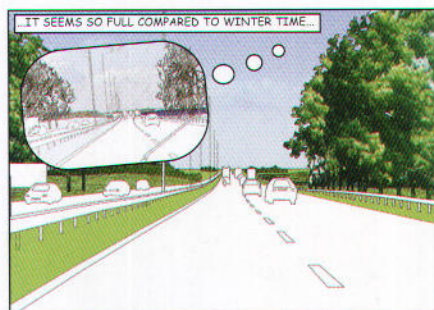
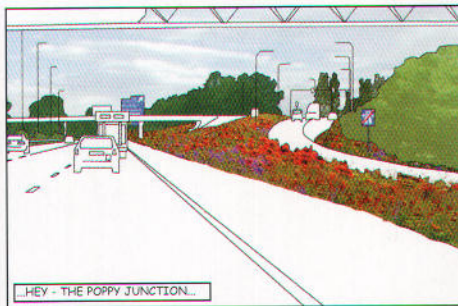
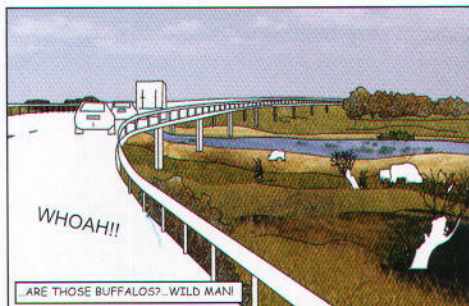
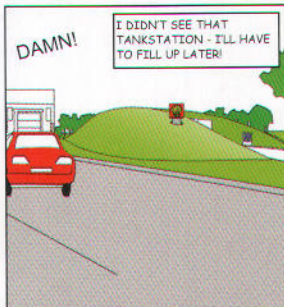
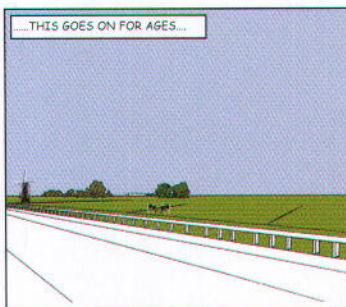
THE ADVENTURES ON “DE LEUKE WEG”

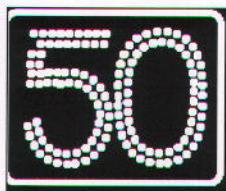
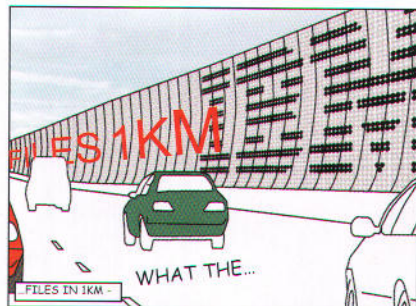
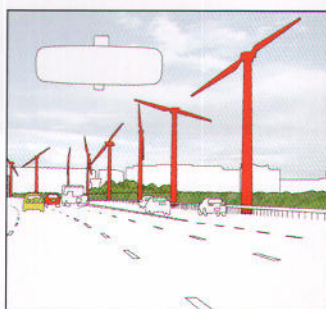


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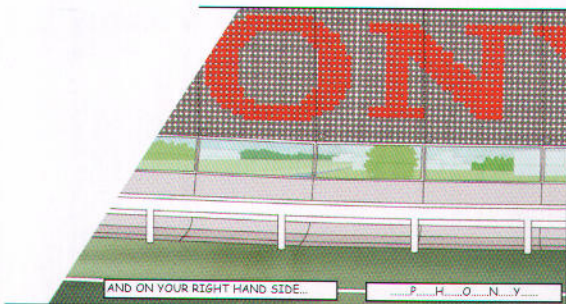
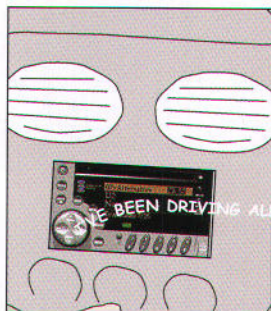
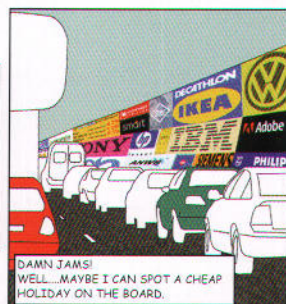
“A SEQUENCE OF DESIGNS”

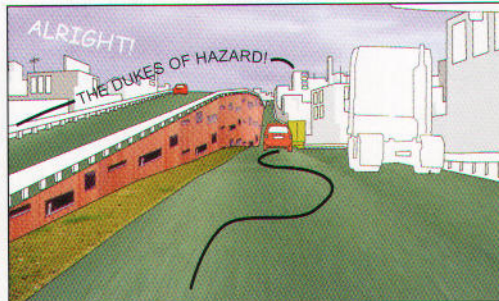
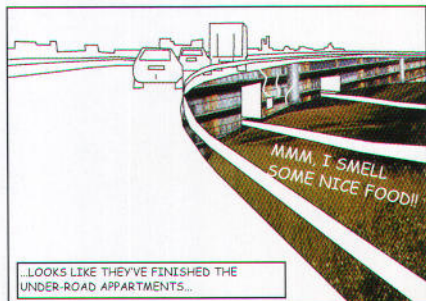
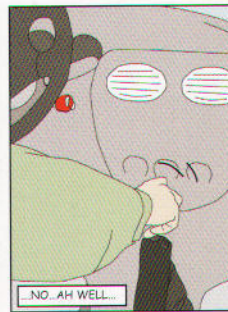
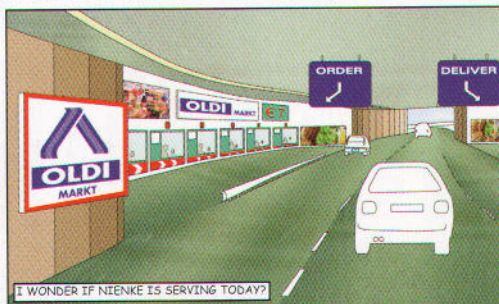
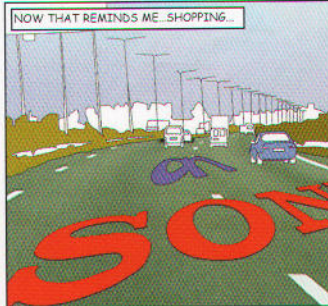
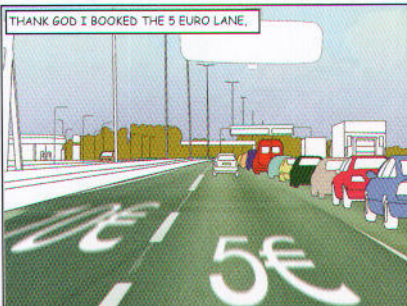


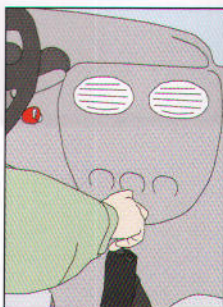
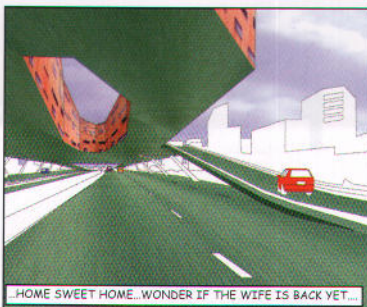




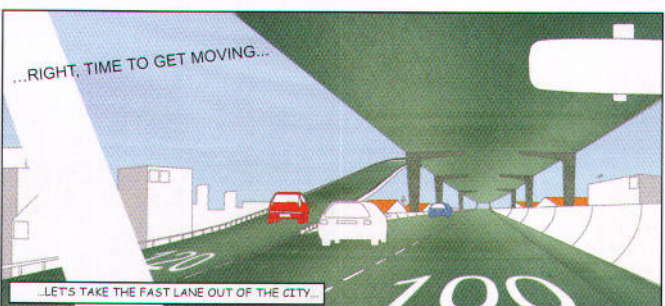
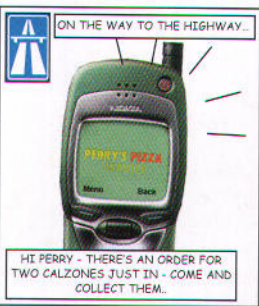
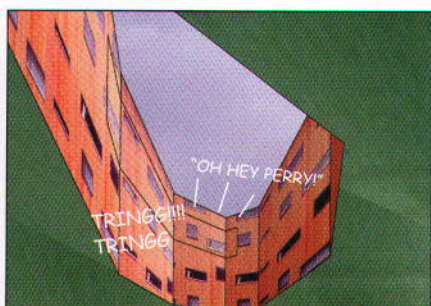
UH, OH!

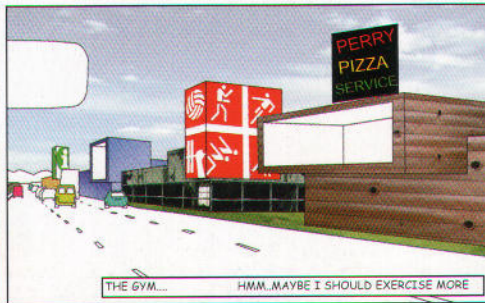
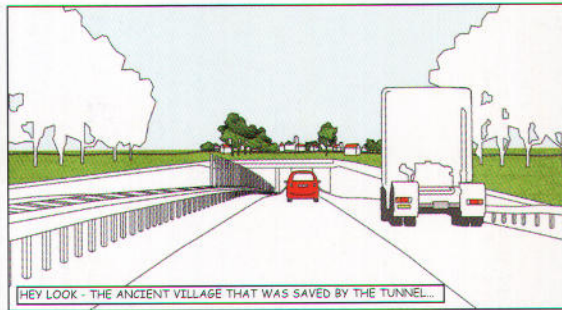
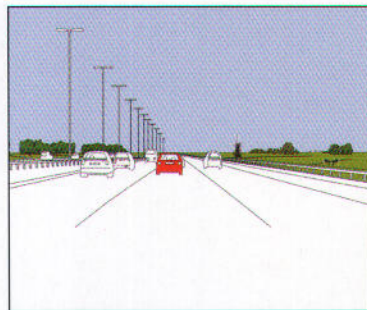
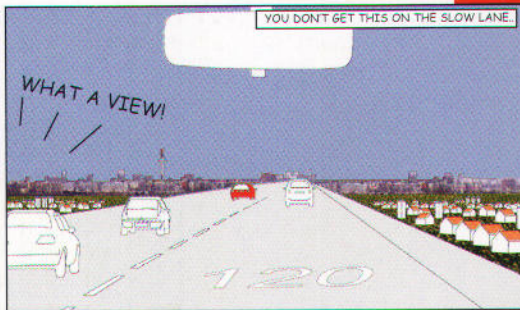






OH, CARSTEN HAS ORDERED
PIZZA...AGAIN!







TRINGG!!! HEY PERRY - WHERE ARE YOU? THE CALZONES ARE GETTING COLD...



... I'M NEARLY THERE - SEE YOU IN A SECOND...

OK... BACK TO BASE...

PERRY
PIZZA
SERVICE

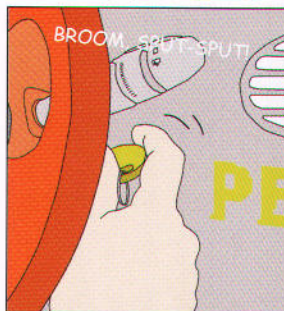


MMM... AN ICE CREAM AT THE SLIDING JUNCTION... THAT'S AN IDEA... WELL... REALLY QUICK THEN!!



ONE BANANA-STRAWBERRY ICE: XTRA LARGE!!

MEANWHILE A STRANGE MAN ENTERS THE SCENE...



BROOM... SPUT... SPUT...

OH NO!!! IT'S "DAN THE DEALER" THE MOST WANTED CRIMINAL OF WESTERN EUROPE!!!!

"STUPID GUY TO LEAVE HIS CAR OPEN. GNAH, GNAH!"

SPAIN: 1021KM...



AND SO WE LEAVE HOLLAND AVENUE- CARSTEN IS HAPPILY SLEEPING IN HIS APARTMENT ABOVE THE ROAD... PERRY, UPSET AT LOSING HIS VAN, IS EATING ICE CREAM ON THE VERGE... AND DAN IS IN THE FAST LANE...

1. ROAD AS OPPOR-

The road as a spatial and formal element offers opportunities for new and in the middle of the road. Or markings on the road surface can announce each other.

2. PURGE & THE

Eliminating the 'non-place' verge area brings the surrounding field into close For example business areas, once set at a distance, could now become new programmes, be given a whole new identity. For example a cemetery

3. PANO-

The field area is the Delta Metropole; a landscape of open areas and a of the road. There are possibilities to strengthen this experience. Wide open provide rest and respite between the cities, announced by

4. ROADUSER &

Vital to a journey is the relationship between the roaduser and the and must be applied sensitively to strengthen it. For example 'above road

A SPATIAL TUNITY

experiences along the road. For example buildings could appear above, below a forthcoming road supermarket. And the lanes could stack up on top of

IDENTIFY VERGE

contact with the road, intensifying the roadusers' perception of the context. immediate and intense areas. On the other hand the verge can, by inserting could appear at a junction.

RAMAS

network of cities. The perception and experience of this landscape is a quality landscape panoramas, uninterrupted by servicestations or planting, could strong urban panoramas.

ENVIRONMENT

environment. Each design strategy has a particular effect on this relationship buildings' should not be placed in the middle of an open panorama!



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