

# ***THE TEMPO OF THE CITY***

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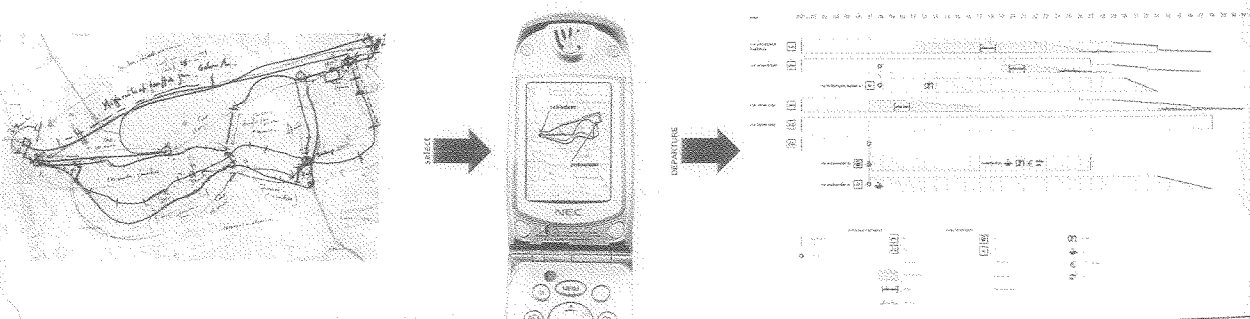
## Relative time

The city is on the move. People commute from home to office, from the office to the lunch café, from the café to a friend's house, from the girlfriend's place to the gym, from the club to the lounge, to the park, back home, to the supermarket, to the shops, to the petrol station, to ... Besides being these many destinations, the city is primarily a place where you are on the move. Travel is a daily activity that to a large extent also determines our experience of our surroundings. The time we spend doing this is more important than the distance covered. Time is the measure by which we compose the 'mental map' of the city. This perception of time is so important, in fact, that there seems to be a 'law of preservation of travel time' around the world, people spend an average of 1.1 hours travelling per day. This applies to developing countries as well as to the Western world. As soon as people are able to travel faster, this seems to be translated into their covering greater distances. The time expended is a constant factor, an equilibrium sought time and again.

Time, however, is relative: to a large extent, what you experience determines 'how long you experience it'. The 'tempo' is defined as a personal experience of the time expended. The 'tempo of the city' starts with the subjective perception of travel time and the travel choices that can be made on this basis. This mobile use of the city is directly connected to the way in which the traffic system is organized. In turn, the current system and the plans relating to it influence the way in which the city will be used in the future.

To a certain degree this is at odds with the spatial and programmatic cohesion of the city as it currently stands, and thus also with its urban planning. The central issue for which we are trying to make some connections is how urban planning might be better equipped to deal with the tempo of the city. In this essay we use the city of Rotterdam as our model, approaching the central question from three different angles: perception of travel time, organization of the transport system and impact on spatial organization.

## Travel planner



Study of the travel options through Rotterdam based on two randomly selected points.  
See the explanation in the box on page 108.

Travelling is a question of briefly residing somewhere, not only because you can experience and participate in things while moving but also because you can also actually do things. The electronic devices that have become part and parcel of urban transport make parallel experiences possible. The mobile phone, the MP3 player and the laptop are all devices which allow you to create your own surroundings at any given place – not in the literal sense of making something physically or spatially, but mentally. With your favourite tape resounding through your head you can imagine that you are somewhere other than the street you are cycling through at that moment. In the car there is a growing range of devices that help the motorist or passengers to do myriad things simultaneously, so that the fact that you are on the road has actually become a side issue. However, the fact that driving has come to be of secondary importance is dangerous too, and has led to recent legislation to enforce 'hands-free' calling. The motorist can lead his or her own life, as if in a kind of self-sufficient capsule, independent of the place where the motorist actually is. The choices have increased enormously. A mode of transport does not merely ferry you from A to B: 'Travel time is activity time!' This means that moving through the urban space is perceived differently to just moving. The journey is designed on the basis of the desired use of time in combination with the possibilities offered by the chosen mode of transport.

Travelling by bike demands more mobile and more compact devices than does the car. The level of comfort influences behaviour: on a tram you are less likely to open your laptop than on a train. The way in which the traffic lights are harmonized with each other and wave the motorist smoothly through green across the city, for instance, are also contributing factors. Being able to spend one's travel time usefully is connected to the reliability. If you know that the journey takes half an hour, with as minimal a risk of unexpected delays as possible, then the journey can be tailored to this. Unexpected setbacks in the journey time constitute a significant emotional delay. A longer than anticipated journey is less terrible when you have been able to take that into account. It is psychologically shortened if you can spend this time usefully with some activity or other, even if just for relaxation, but the mode of transport must offer you a certain level of comfort. The duration of the journey itself is also a defining factor in this: different means are employed for ten minutes than for a whole hour.

At the end of a hard day's work you might want to take a quiet route, from where you can watch a beautiful sunset, or contemplate the unfolding panorama of city lights being illuminated while you are waiting at the traffic lights. If your surroundings contribute to your journey, the time is perceived as relatively short and the journey feels less like 'lost' time. Besides the spatial pleasure, there can also be programmatic enjoyment offered on or alongside the transport network: the road that passes a pleasant bar where you meet friends, or the station where you can have a cup of coffee or do other on-the-hoof shopping before departure, on arrival or while transferring. The ability to choose among various travel options to reach a particular destination is, after all, a decidedly 'metropolitan pleasure'. The frequency of public transport, transfer facilities, the finely meshed networks of public transport, car and bike – all these factors contribute to a multifaceted 'city experience'.

Perceived travel time is determined by four factors: speed, reliability, comfort and pleasure. Alongside the possibilities in the interior of the chosen means of transport, it is the traffic system that plays a key role here. A study into a journey within Rotterdam's urban/metropolitan network (see sidebar) compared a variety of possible routes which are theoretically not so dissimilar in actual duration, but are certainly different in terms of the degree of reliability, comfort and pleasure. The traffic system turned out to be 'multimodal' for this sample route: it offers choices in transport modes and also offers the possibility of switching from one mode to another along the way. Each route offers a different way of moving through the city, and therefore a different perceptual perspective on and experience of the city.

### Travelplanner

An example for a cursory study into different ways of travelling is the journey from a house in the Alexander Polder to Schiedam-Centrum railway and metro station. Following the opening of the east-west metro extension, seven more or less comparable options seem to be available. These include various motorways and various possible intermodal transfer hubs.

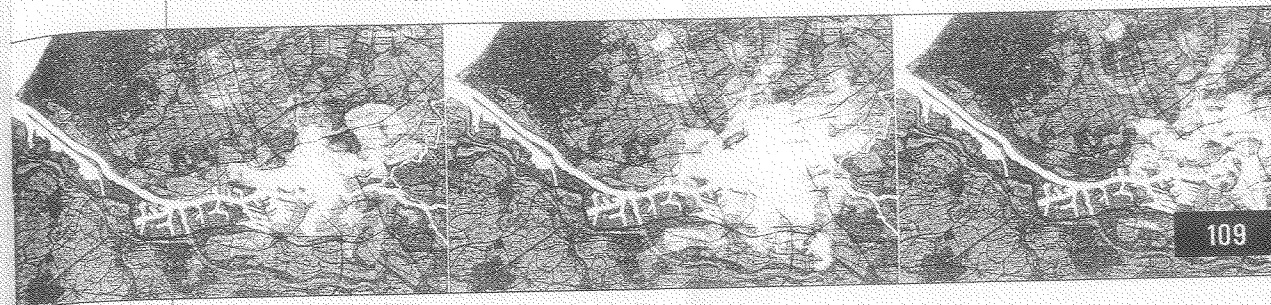
The motorway is theoretically the quickest, but only if there are no traffic jams. The reliability of the A20 around here is not high, but this could be improved with up-to-date information. By using Dynamic Traffic Management Systems (DTMS), the city council is striving to inform motorists of current conditions at various places in the city using electronic information boards. These are placed at strategic decision-making points in the transport network, so that you can change course if the route planned is suddenly obstructed by delays. This strategy will once again make the high-speed routes reliable.

The bicycle is without doubt the most reliable mode of transport, and it is not even the slowest. This is partly thanks to the fact that the cyclist moves relatively independently of the waiting times at traffic lights. The distance from door to door actually involves a simple calculation using geographical distance and average cycling speed. What's more, cyclists get the most pleasure from fine weather and undoubtedly enjoy the best view.

The train offers the best chance of a rapid connection, with a transfer at the Central Station. If the NS (Dutch Railways) does its job properly then this journey is also highly pleasurable: you have enough time to buy a newspaper and drink a cappuccino during the transfer.

The most attractive option is the motorway that meanders along with the river via the Maas Boulevard and offers beautiful and varying panoramas of the cityscape. As with all the motorways through or around 'the centre', this one is most unreliable at rush hour. Transferring to the metro at Kralingse Zoom presents a quicker alternative. The further you live from the Alexander metro station, the more sensible a short car ride to the Kralingse Zoom. The short waiting times on the metro and the ease of parking balance out against the bridging of the geographically shorter distance to the closest metro station, where the metro also rides less frequently.

### An isochronous city



Accessibility by public transport within 30 minutes from seven Rotterdam nodes

1. The situation in 1998, the benchmark year
2. The target scenario in 2020
3. The increase in accessibility in 2020 compared with 1998

Behind the temporal perception of infrastructure lies a world of traffic models. The entire Rotterdam region has been assimilated in a mathematical model of traffic movements classified by point of departure, destination and the effect on all the traffic spaces in between. From a chosen point in the city it is possible to calculate to the minute how long it will take to travel to all the other points in the Rotterdam region included in the model. The results of all these time calculations are compiled into an 'isochronous' representation of the city. This is like a time zone projected onto the geographical map of the city and represents how long it takes to travel from a specific point to surrounding areas with the mode of transport chosen.

In the traffic model used by the city authorities the calculation always starts from a single point. By combining multiple points, each time taking the shortest travel time, this delineates an 'accessibility profile' for Rotterdam. It is interesting that the *Ruimtelijk Plan Rotterdam* ('Spatial Plan for Rotterdam', the city's urban policy through 2010) is based on seven future modes, around which the accessibility must be organized.<sup>1</sup> This takes into account not only the city's current polycentric functioning but also projects this into the future. The city council's ambition is to make the entire Rotterdam region accessible within 45 minutes by public transport, from at least one of the seven specified nodes in the city. The effect of this is best seen in the projected public transport lines, intended to connect the various nodes without the need to travel via Rotterdam's Central Station. In fact public transport will then be able to do what the car already does: describe a less hierarchical network. Perhaps the 'Central Station' should be renamed at that point.

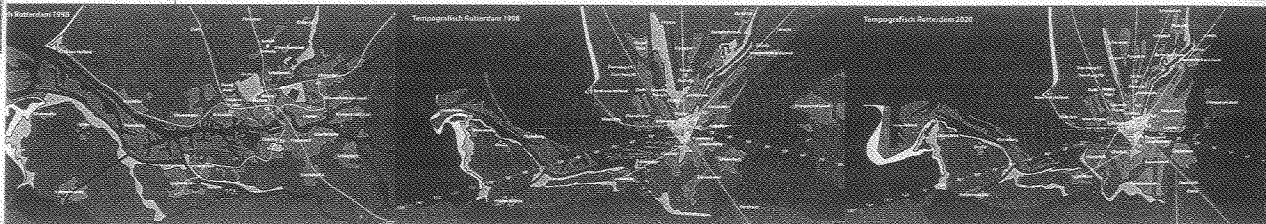
The isochronous maps are a representation of the network city: the city that is shaped by flows, connections and nodes instead of by formal, hierarchical or spatial structures. Now that the functional and formal structures coincide less and less frequently, the question is whether the legibility of the dynamic city still has anything to do with spatial cohesion. Time orders the use of the network city, which is based on the possibilities presented by the infrastructure network. Does the 'tempo of the city' form a different basis for its spatial planning? An initial answer is that the city may indeed be legible, but



the continuity does not necessarily coincide with the formal structure of the city. The functional infrastructure is continuous, but the programmatic and spatial continuity are highly variable and are even absent in many places. This stands in sharp contrast with the 19th-century enclosed cityscape, which still forms the city's frame of reference for many. In this city, the structures that organized it spatially, made it functionally accessible and were programmatically significant worked as one. A familiar example of this is the system of boulevards in Paris, which formed the basis for the spatial planning of the entire city. In the modern city, these three functions are usually no longer united.

Nowadays, for example, the metro plays an important role in the experience of the fragmented city as an entity. The Rotterdam's metro map gives an excellent impression of the organization of Rotterdam, in which all the centres are carefully interconnected by two neat lines: a red one and a blue one. The bigger the city, the more important this system is for the use of the city. Many metropolises can only be understood from their metro systems and the logic that these systems offer. The time factor related to this orders the city, and the way the city is understood. Sometimes it is still possible to find the rudiments of a formal structure being used functionally, but this is usually on a smaller, more local scale. On the larger scale, one has to search hard to find other ways of representing the city.

### The tempographic city



A tempographic representation of accessibility by public transport in Rotterdam, based on seven nodes

1. Geographical rotterdam 1998
2. Tempographic Rotterdam 1998
3. Tempographic Rotterdam 2020

Imagine that the city exists not as it is represented geographically, but as a function of the amount of time it takes to get through it, to it or away from it. Such a map, based on a timescale instead of a geographic scale, is called a tempographic representation. In contrast with an isochronous map, where geographical distances are measurable while time is represented without a scale, the tempographic map displays a measurable timeline and geography without a scale. Because the traffic models calculate distances from a single point, durations have to be calculated for many 'timed' distances, and these are collated in order to allow a depiction of the city in a meaningful form.

Direct representation would produce an illegible result and requires drastic simplification of the geographical data, as well as choices about what will be shown on the map.

The form of transport to be represented is the most basic choice. Public transport and the car produce very different maps. The Rotterdam *Ruit* (literally the 'Diamond', the rhomboid system of urban motorways) is very familiar and could almost be read as a logo. The *Ruit* organizes the city's accessibility by car on the basis of its exits, which is demonstrated by the burgeoning programme so close to these motorway entry and exit ramps. Public transport is primarily oriented around the seven nodes mentioned above. Because most changes will take place in this respect in the near future, it was decided to map out a representation of the public transport. The tempographic map can then also be compared directly with the isochronous map.

Between the stations of Schiedam, Alexander and Zuidplein, the whole urban territory has been shrunk into a compact 'urban triangle'. Within this everything is 'flattened', as it were, in terms of accessibility. This urban triangle is actually the modern public-transport network version of the historic port triangle on the Maas. The subtleties of the network within this urban area are set aside in favour of a tempographic representation of the whole Rotterdam region. In this imploded world, stations that lie far away seem to be next door, while some areas that are geographically 'next door' seem inaccessible. In future, from the 'central area' between the seven nodes, we will be able to travel just as quickly to Schiphol Airport as to Breda, Spijkenisse, The Hague or the Hook of Holland. Recreational areas, by contrast, seem to be poorly accessible by public transport, while public transport could present an ideal alternative to the great automobile migration that gears up in tandem with fine weather.

The tempographic model of the city primarily tells us about its usage patterns. The map shows a city that presents itself in its links to other urban places. Someone from Rotterdam can shop just as easily in other urban locations, in the same way other urbanites visit Rotterdam's shops. The cultural significance of this extends far beyond a more quickly accessible environment – it is instead a question of choosing one's personal city from the variety of urban places on offer in combination with the different forms of transport available. Channel-hopping behaviour is not limited to the dozens of TV channels available these days; it continues when you leave the house and go out into the streets. Everyone puts together his or her own city based on the mode of mobility selected. The tempo of the city is a personal film, and just like in the cinema, it is interwoven with 'flashbacks' and 'subplots'. The thread running through it is formed by the physical infrastructure that offers the best combination of speed, reliability, comfort and pleasure. This fact has an impact on the spatial planning of the city. For the car this impact is probably even greater than it is for public transport systems, because the road network is more directly confronted with the formal structure of the city. That structure is usually no longer tailored to more intensive use of the car. Rapid routes follow the path of least resistance, no matter what the spatial logic. All that is required of the road system is that signposting be clear. Alternatives must be easily legible in case another route needs to be selected. A certain dynamic logic is of course important, as

backtracking is never a good way of making progress, and the networks should also be finely intermeshed. 'Routing' is increasingly performed by GPS devices, alongside which new user options for the capsule are evolving at a rapid pace. The result is that the motorist is increasingly becoming a passenger in his or her own car. A less hierarchical and more flexible network facilitates ease of use. Just as in the strategy adopted for public transport, there is no longer just a single centre operating like a trap for all the traffic.

Future urban planning will focus increasingly on maximizing the options offered by the traffic system; more geared to the planning and use of infrastructures. In this context, urban planning and traffic control are interrelated disciplines that provide the choreography for the city's circulatory dance. That requires a different attitude towards movement that is alert to opportunities for optimizing usage and for broadening the infrastructure's public significance.

Programmatic flexibility is a key to multiple spatial usage. Instead of physically stacking or extending, the physical structure can encompass different usage at different times without taking up any more space. Such a design would entail the organization of a time schedule for the existing infrastructure: a kind of choreographed flow. That in turn would require the layout of the road profile to be rethought: for instance, changing the direction of the traffic-flow during the morning and evening rush-hours (suggesting that tramlines should no longer be placed in the centre of the road). Traffic flows can be influenced by increasing or decreasing traffic-calming devices.

The traffic system can also acquire a multiple significance by injecting the infrastructure with the quality of social space. Parking solutions, for example, could serve as more than just garage spaces, they could also be urban destinations, places where people meet and relax, or just simply a spot with a stunning view. Rotterdam still lacks a real multi-storey car park in which the combined presence of hundreds of motorists would provide an unprecedented vertical light-show.

Of course, developments of this nature are applicable to both traditional city centres and the more peripheral areas that have long since attained the status of urban locations.

The data used was gathered by the 'Knowledge Centre', Traffic and Transport division, the Department for Urban Planning, Housing and Traffic (dS+V), City of Rotterdam. My special thanks to Harko Stolte for his feedback and suggestions. This essay is based on the study 'TM.RPT.2001' carried out by --scape for the Traffic and Transport division, Department for Urban Planning, Housing and Traffic (dS+V) of the City of Rotterdam. Contributors to the research by --scape were Pler Helder, Diego Barajas, and Florian Boer, in association with Jan Jongert. Thanks are also due to employees of the City of Rotterdam - Harko Stolte, Wilco Verhagen and Leo de Jonge - for their invaluable input.

1. The seven Public Transport nodes cited in the Rotterdam policy are: Alexander, Kraalingse Zoom, Parkstad (near the Kuip stadium), Zuidplein, Schieveste (Schiedam centre), Noordrand and Central Station.

# DARK SIDES

Mobility is crucial to contemporary society, but it has many dark sides.

Dolf Broekhuizen