



Improving the legibility of the city center of Rotterdam

Colophon

Title: Improving the legibility of the city center of Rotterdam.

Thesis Plan

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Preface

This document forms the thesis plan, as part of the graduation project in the studio of Urban Fabrics. This master thesis is written for the graduation project at the Technical University of Delft, Faculty of Architecture, department of Urbanism.

The thesis plan describes what and how the research has been and will be done in the past and next semester of the graduation year and how the project is expected to continue with the design in the upcoming period. The research is mainly focused on the theoretical background and analytical framework, in which literature is used to define the context and framework of the project as a basis for the design.

The subject of this graduation project is Legibility: creating a strategy of small-scale interventions to improve the wayfinding abilities of humans in the physical environment.

This thesis plan describes the first phase of this project and how it will continue the coming semester. It is divided in five chapters in which all aspects of project are enlightened. In the first chapter the problem, aim and research questions are introduced, as well as an explanation of the methodology that will be used. The second chapter contains part of the theoretical framework which is providing a theoretical background and understand of aspects, theories and concepts in relation to the main topic. The third chapter is the analytical framework which will consist of specific analysis to the project location. In the fourth there will be a short reflection on the research questions and an answer will be given if possible. Besides this, a recommendation is given for the continuation of this project. The fifth chapter, that will be filed in the upcoming semester, will deal with the design framework, in which a physical answer is given on the main research question.

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1. Introduction Graduation Project

1.1 Motivation

Everyone has been disoriented once in their life, and the feeling which corresponds with this disorientation is can vary from enjoyment exploration to panic and fear. Most people will ascribe this getting lost or disorientation to a missing sense of orientation however other blame architects and urban designers since they provide the physical environment in which the (dis)orientation takes place.(Arthur & Passini, 2002) However is to blame, it is interesting to see what role urban designers can play in the wellbeing of people in the physical environment.

The topic of legibility has been chosen as a research theme because of personal fascination. The behavior of people in the public space is interesting to say the least. How do they determine their way, how do they know where to go? And what role do designer have in this process. This fascination was fueled by the course People, Movement and Public Space in which important theories about this topic were discussed.

As will be clear in the following paragraphs the topic of legibility is of high importance in municipality documents. In their battle to attract more visitors and seduce them into a longer stay the involvement of the notion of legibility is unmistakable. When people are able to find their way through an environment without getting lost or disoriented, they feel more at ease and are enjoying their stay much more. As research has shown, for every hour a person is willing to stay longer than the average, the amount of money he or she is spending is increased with €40 to €50. It is thus of importance the offer visitors of the city of Rotterdam a legible city center.

The question on how to organize a city in such a way that it is clear for everyone to move through is thus an interesting and important one. How can we facilitate the people in the inner city of Rotterdam with a clear physical structure in which the routes are easily discovered and the center overall feels legible?

1.2 Problem statement

In December 2008 the municipality council adopted the Binnenstadsplan 2008 – 2020, in which the central theme will be the qualitative step to bring the living environment of the inner city to a higher level. The notion of 'City Lounge' articulates the feeling the new inner city must radiate. This is why the title of the document is: Binnenstad als City Lounge (translation: Inner city as City Lounge). The notion of 'City Lounge' also articulates the core task of the document; to develop the city center into a quality spot for meeting, stay and leisure for inhabitants, companies and visitors. (Gemeente Rotterdam, 2008) To achieve this, they have arranged the ten most

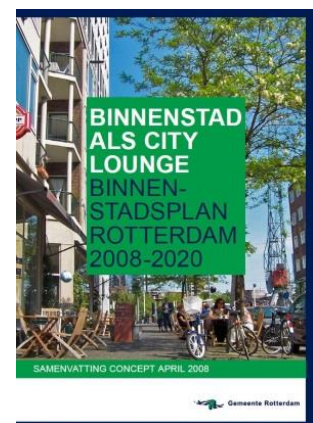


Image 1

important points or goals, which are further divided among six ambitions, which are stated below:

- Smart economy;
- Centre living;
- Culture & Leisure;
- Groundscraper;
- River city;
- And Connected city.

In 2010, the municipal college presented their program document for the period of 2010 till 2014, of which the title is Programmaplan Binnenstad. This document is an elaboration of the ambition of the municipal college and also an complementation and actualization of the above described document, Binnenstad als City Lounge. It's ambition is best described in the following statement: "We want more people who live and work in the inner city. Besides this we want more people to visit the city center, who stay there longer and spend more during that period. To achieve this we continue to develop the inner city into a place where there is always something happening. A place where it is pleasant to stay and linger for residents, visitors, students, businesses and investors." (Gemeente Rotterdam, 2010) The six ambitions in the above mentioned document are converted into five pillars:

- Lively inner city;
- Welcoming inner city;
- Inner city to live in;
- Connected inner city;
- And Productive inner city.

Then after three years the municipality decided to have an evaluation moment, in which the developments of the above described documents were evaluated. In this monitor of 2013, expert panels evaluated the city center and concluded that a lot of progress was made in recent years. Much progress was made except in one particular field; the field that was dealing with the legibility of the city center. Experts from the five different pillar stated that legibility should and could be improved and more money should be spend on software instead of hardware. Software being the connections between places and experiences along these connections; hardware the buildings surrounding the connections. (Gemeente Rotterdam, 2013)



Image 2



Image 3

Last October, the municipality presented their new city lounge document, with the focus on the time period of 2014 – 2018. In this document the notion of legibility is still abundantly present: The necessity to improve the legibility; To strengthen and connect the places in the inner city that have been hidden until now. In order to achieve this, main focus points are reconnecting the missing links and the downscaling or downgrading of barriers.

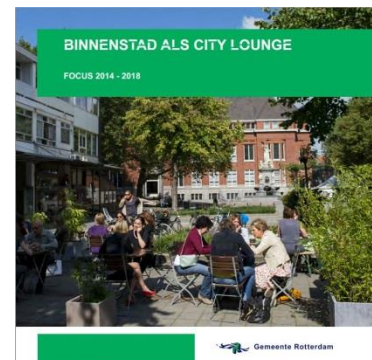


Image 4

That the legibility of the city center is a problem is also based on personal observations. When walking through the city center I overheard two woman talking to each other on the intersection of the Korte Lijnbaan and the Lijnbaan. They did not know which way to go and were clearly looking for the 'right' way to walk. Eventually they ended up following the main stream of people onto the Lijnbaan. Apparently, for visitors, it is not clear enough which routes have to be taken to get to their destination.

Besides the personal observations and the abundance of the notion of legibility in municipality documents, a variety of people working at the municipality are acknowledging the urgency of the matter. In their way of reasoning, an improvement in legibility leads to a longer stay of visitors of the city. For every hour a visitor stay longer, the average amount of money he or she spends more is somewhere between €40 and €50. Of this total amount of course not every euro will go to the municipality but certainly some of it. For the municipality is thus crucial to improve the legibility of the city center.

1.3 Project aim

The final objective of this project is to provide the municipality with an approach to solve the problem of legibility in the city center. But where do these problems of legibility consist of? Legibility, in the municipality documents, is meant by good routes between places. It is mostly about connecting and reinforcing the, until now, unknown places in the inner city. In different terms, one is talking about restoring missing links and downgrading barriers.(Gemeente Rotterdam, 2014)

As one of the expert panels stated in the evaluation monitor of 2013, legibility requires uniformity, regularity, clarity, and consistency in the physical environment. However, legibility is not only an design issue, it also involves mental processes on how people perceive the city and how they are able to represent themselves in their physical environment. Therefore, the final proposal will improve the legibility of the city center, restore visual and physical connections between the Eastern and Western part of the city and will revitalize parts of the city center which have been disconnected from the main shopping route until now.

To specify the above a little further; from analysis it becomes clear that a certain route through the city is being preferred over others. This is the route along the Korte Lijnbaan – Lijnbaan – Hoogstraat. (Image 5) The municipality of Rotterdam has divided the inner city in different shopping environments which each have their own character. (Image 6) (Gemeente Rotterdam, 2011) The current, preferred, shopping route does not connect all these different environment in the most effective way. Besides this, there is no such thing as closed circuit. By restoring the link between the Meent and Aert van Nes a more diverse pattern will emerge in which people can move through the city. Also, the various shopping environments are, in this way, better connected with each other. (Image 7)

Following previous research and other authors, in complementation with some analysis, my initial response is that the strategy will consist of multiple small- to

medium scale interventions on strategic positions / points, where their influence is optimal and they strengthen each other. This response, however, should be tested in a design to see if this assumption is the right one.

The target group, for whom these interventions will be designed, will be the visitors of the city center who come from all over the Netherlands but also the world,

since Rotterdam is becoming more and more known as tourist destination. (Image 8) The reason why visitors of the city are chosen as the target group for this graduation project is the following; the legibility of the city center is, for people who are living and/or working there, a less important aspect. They are already capable of finding their (right) way.



Image 5



Image 6

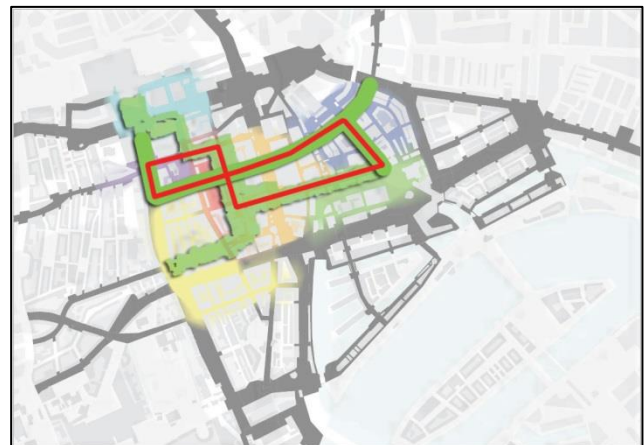


Image 7



Rotterdam makes top 10 of The New York Times' list of 52 Places to Go in 2014

After being ranked 8th in the Top 10 Cities to see in 2014 by Rough Guide, the City of Rotterdam made the top 10 in the list of 52 Places to Go in 2014 according to the New York Times. So make sure to plan time for visiting the city if you register for the 28th IPMA World Congress.

Image 8

1.4 Location

As a location for this graduation project the city center of Rotterdam is chosen. When saying 'city center', in this graduation project especially the two districts bounded by the roads are meant, as can be seen on the right.(Image 9) Since most functions are located in these two districts, for this graduation the assumption is made that this is the 'city center'. Information is easily accessible and in Dutch, and since I live in

Rotterdam, the location can be visited at any time. This will be helpful when using the methods of questionnaires and mental maps to gain information from the target group.

Because, as mentioned above, Rotterdam is becoming more internationally known, it is important to offer the visitors of the city a legible and lively city center. With the documents mentioned in the problem statement, Binnenstad als City Lounge 2008 – 2020 and 2014 – 2018, progress

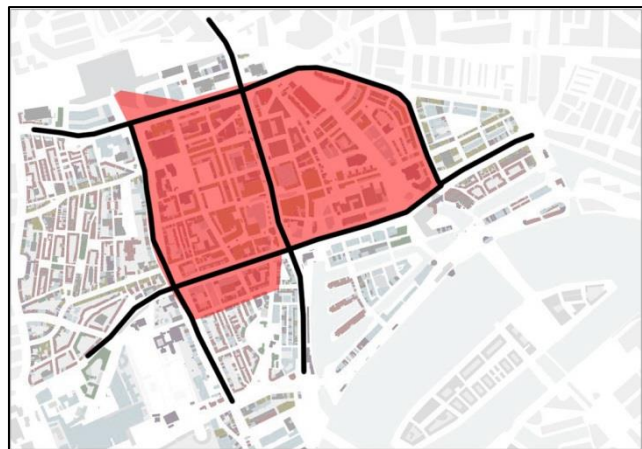


Image 9



Image 10

has been achieved, however, in the field of legibility still huge steps can be made.

In the project aim it is explained that for the municipality the notion of legibility mainly has its focus on missing links and existing barriers in the city center. From different documents and analysis, among which the Plintenstrategie, with its associated documentation, various missing links have been found. (Gemeente Rotterdam, 2011; Gehl, 2007)(Image 10)



Image 11

For my graduation project I want to focus on the missing link between the Meent and the Aert van Nes. Reasons for this choice are the following:

- First of all, the link between the Meent and Aert van Nes is according to my own perception, one of the most important ones since the Coolingsingel is crossing both streets perpendicular. The Coolingsingel is the biggest barrier in the inner city between the Eastern and Western part. (Source) This barrier is still dividing the city into two sections. The link Meent – Aert van Nes could solve this division. (Image 11)
- Until now, the only working connection between East and West is the Koopgoot / Beurstraverse, which is running under the Coolingsingel. By adding / improving the connection Meent – Aert van Nes, the diversity of the urban fabric is increased. This stimulates the development of new routes through the city and the possibility of connecting the different places and atmospheres. (Image 12)
- Third and last reasons is that the existence of this missing link is, in my point of view, in fact the expression of the fragmentation of the policy of the municipality of Rotterdam. The Coolingsingel is, next to being a barrier, also the edge between the districts Cool and Stadsdriehoek. (Image 13 and 14) (Between 'stadskwartieren' Lijnbaankwartier/Coolingsingel and Laurenskwartier) For each district a separate vision



Image 12



Image 13

is made, which contains the future goals for that specific district. Because of this, the focus is shifting from a view to the outside to a view to the inside; the connection with surrounding districts is lost / underexposed.

These reasons gave enough evidence and input to choose this missing link as location for my graduation project.

Naturally, the link Meent – Aert van Nes is part of a bigger network of streets, alleys and routes. On the larger scale it can be a section of a route between Rotterdam Central Station and Station Blaak or the Neighbourhood park on the West-Kruiskade to the Goudsesingel. (Image 15 and 16)

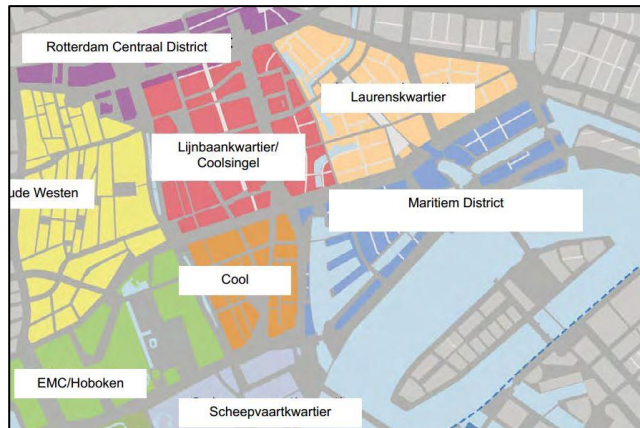


Image 14

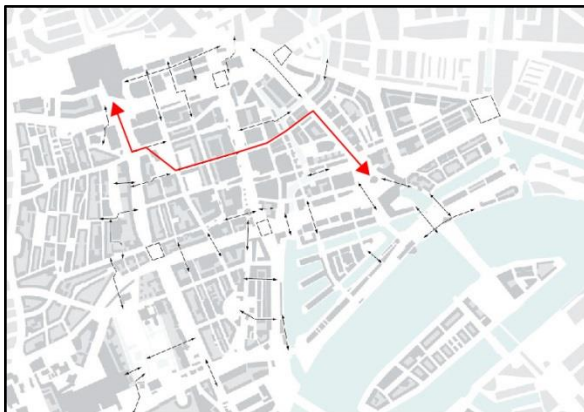


Image 16

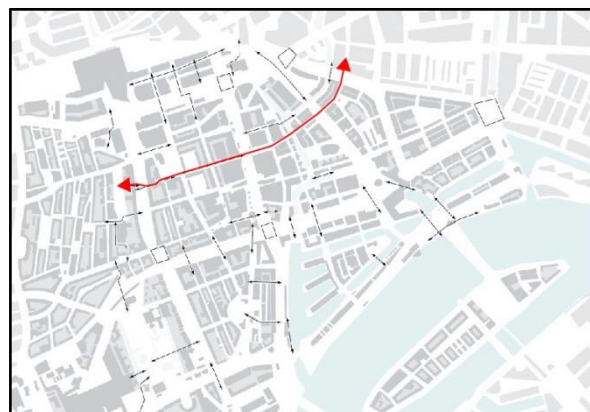


Image 15

1.5 Relevance

As already described in paragraph 1.1, the topic of legibility was chosen due to the personal fascination I have with the behavior of people in the public space. How do they know where to go, and what role does the physical environment play in this process of finding ones way?

Besides a personal motivation for the topic of my graduation project, the subject of legibility also has an academic and societal relevance, which will be discussed below.

1.5.1 Societal Relevance

As mentioned in the problem statement in paragraph 1.2, the problem of legibility in the city center is being addressed in multiple municipality documents, the latest being the vision for the inner city for 2014 – 2018. The abundance of the notion legibility shows that the problem is relevant for the municipality to tackle. Since the observation, in the evaluation monitor of 2013, not much has changed in the structure of the city or the public space. This is why the topic is still mentioned under the section 'urgent' in the new vision for 2014 –

2018. Multiple landmarks have been added to the selection of icons of the city of Rotterdam, but nothing to strengthen the legibility c.q. solving missing links, in particular the missing link Meent – Aert van Nes.

Besides the wish of the municipality to improving the legibility and reconnect the missing link, already efforts are made from other parties to make the missing link more lively and enjoyable to walk through. (Image 17 and 18) However these are just individual developments, which can benefit from an overall strategy in which these developments play a key role.

Geopend; de grootste mannenwinkel van Rotterdam



Ingezonden lezersartikel door: [ceesjellema](#)
(Rotterdam)
01 apr 2014



AERT aan de Aert van Nesstraat 125 is de nieuwe kledingwinkel voor mannen die de essentie van stijl bevatten. De ultieme walk in closet waar je de outfit vindt die andere mannen niet hebben, maar wel willen



Aert
ceesjellema

mannenwinkel van Rotterdam. Een winkel die vintage, design en industrieel combineert en daarmee voorbij klassiek stapt. AERT. is nu en niet vroeger..

AERT.: suits, denim, luxury, mancave.

Aert is de nieuwe winkelattractie voor Rotterdam.

Met een collectie die getoetst wordt aan drie kernwaarden: de bracht van het ontwerp, ambachtelijke virtuositeit en de aantrekkelijkheid van de prijs.

Het resultaat: gevestigde namen als Zegna, Etro, Jacob Cohën, Feuterey, Laboratorio del Carmine en PT01, maar ook aanstormend talent als Drumohr, Natural Selection, Tiger of Sweden en Ten C. Beloon jezelf na het passen vooral met een Gin & Tonic of een bloedhete espresso uit onze Vault Bar. It's on the house. Met bijna 500m2 is AERT. de grootste

Hotel en wellness in het oude postkantoor aan de Coolingsingel

15 augustus 2014 om 10:43 door Danielle Rijdsijk



Image 18

Image 17

1.5.2 Academic Relevance

As mentioned earlier in this thesis plan, huge steps in developing the city center into a quality spot have been made. Focus is now shifting to the part of leisure and stay. The visitor is becoming more and more important. The municipality wants to offer the visitors of their city the best experience they can get. This is being done because in this way, people are more at ease, enjoy more and stay longer. And especially the latter is important. With every hour people stay longer, they spend €40 - €50 more. It goes without saying, that this can have a positive effect for the city of Rotterdam.

However, to stay longer and thus spend more, people have to feel at ease and are able to find their way through the city center. To facilitate this in the most optimal way it is important to know how the legibility of the city works. Theories on this topic are, however, from decades ago. Kevin Lynch was the first one to come up with the notion of legibility in his book 'The Image of the City' in 1960, and until 15 years ago his theory was the prevailing one, despite the fact the Lynch, in the 1980's, critically reviewed his own conclusions. In my opinion the theory of Lynch, and other theories from the 1970's and 1980's are outdated. They are in need of refreshing. How are the theories of Lynch, Appleyard, Golledge, Kaplan and Portugali applicable in contemporary design for legibility and what possible additions can be made?

1. Introduction Research Framework

1.6 Research Questions

Since Rotterdam is becoming more internationally known and the municipality is putting its effort in staying it is of importance that the missing links in the city are dealt with and at the same time the legibility is taken care of. In order to assure this, the graduation project is structured by means of the following research question.

What kind of small-scale interventions within the urban fabric can help to improve the legibility of Dutch inner cities, and how can we facilitate them?

In order to give an answer on this research question the following sub questions will help divide the main question into manageable parts.

- What are theories of urban legibility?
- What are problems resulting from lack of legibility?
- How does the municipality of Rotterdam see the problem of urban legibility?
- What are lessons that can be learnt from other Dutch cases?
- What are examples of interventions that have improved urban legibility?
- How can small-scales interventions be facilitated?
- Which actors are involved in the specific small-scale interventions?
- How do visitors experience the problem of legibility?



Image 19

1.7 Methodology

Different methods will be used within this graduation project to get to the final results and provide an answer to all the sub questions and the main research question. The reason why different methods are and will be used has to do with the way information is gained. Different methods mean different ways, which could lead to broader perspective on the subject and its final solutions.

Literature Review

In the theoretical framework, the method of literature review will be used. The literature review is used to understand different topics, using existing theories. Knowledge about legibility, human behavior and cognitive maps is gain from different literature and research, compared with each other to understand the relations between the notions.

With this literature review a broad and academic basis is made which contains the necessary information to understand the main topic and form a position, from where more detailed research can be done to provide a first answer to the sub research questions. One of the question which, hopefully, can be answered after this literature review is the following; What are theories of urban legibility? Another question, about what problems will result from lack of legibility can probably be answered, be it partially. Other input, for instance from literature study, is needed to give a full and proper answer to this question.

Literature Study

The literature study is used to gain knowledge and learn from experiences when investigation the situation and location for this graduation project. Documents from municipalities about future directions / goals compared with knowledge from the literature review, described above, provide insight in the location specific approach. This will form a theoretical basis as a start for the analysis which is the next step. Questions that are intended to be answered with this method are; What are problems resulting from lack of legibility and How does the municipality of Rotterdam see the problem of urban legibility?

Socio-spatial analysis

This method is important when investigating the project location. The aspects and problems of the connection will be analyzed, in general and theoretical specific analysis, to be able to make a design for this specific location. Also here, input is gained from the sub question of what problems result from lack of legibility. Besides this, it gives initial inside in which actors are involved in the area and what their wishes are, when small-scale interventions will be implemented.

Reference analysis

This method is used to gain inspiration, knowledge from other experiences that are in a way comparable to this project. In the cities of Utrecht and Haarlem the topic of legibility is an important notion as well. The information gained from these analysis will be compared with the information which is gained from the other, above, described methods. Two sub questions are the underlying thought in doing a reference analysis; What are lessons that can be learnt from other Dutch cases? In this case, the cities of Utrecht and Haarlem. And the other one, what are examples of interventions that have improved urban legibility. Since both cities are further in tackling the problem of legibility, hopefully, working examples can be copied, adjusted to the case of Rotterdam and be implemented.

Interviews

Last but not least the method of interviews. In this case it is a notion which incorporates both questionnaires and mental maps. These methods will be used to retrieve information from people who are related or play an important role in the functioning of the connection between East and West. In the end the end-users are the visitors and inhabitants of the city of Rotterdam. So it is only natural to incorporate the knowledge these people have in the design. How do these people experience the city and problem of legibility are important

questions that need to be answered in order to provide a design in which all wishes and needs of the actors are incorporated.

1.8 Final Products

This graduation project will result in several, cohesive final products. Of the theoretical part, the graduation plan and the final thesis plan will be the end products. These two documents will explain the structure, problem, research and theoretical framework / underpinning of this graduation project. The research questions will be answered with the use of the associated theory and methods, that will strengthen the to be implemented design / strategy.

The final design product will be a strategy for the missing link Meent – Aert van Nes with a broader perspective to not only fix the missing link at the local level, but also enable this link to be part of a bigger network between East and West, the 'binnenstadskwartieren' Laurenskwartier and Oude Westen or Rotterdam Centraal District to Maritiem District.

In this strategy, various specific and crucial points along the connection will be designated for key developments which hopefully act as primers for further, future development.

Besides the strategy for this connection, which is the connecting element between the various scales, a design will be made for one of the specific and crucial points which have been designated for development in the above mentioned strategy. This will probably be the section where the Meent crosses the Coolingsingel and continues in the Aert van Nes. The reason for this choice is that this spot is the embodiment of the missing link. This place is the most crucial point in restoring the East to West connection.(Image 20)

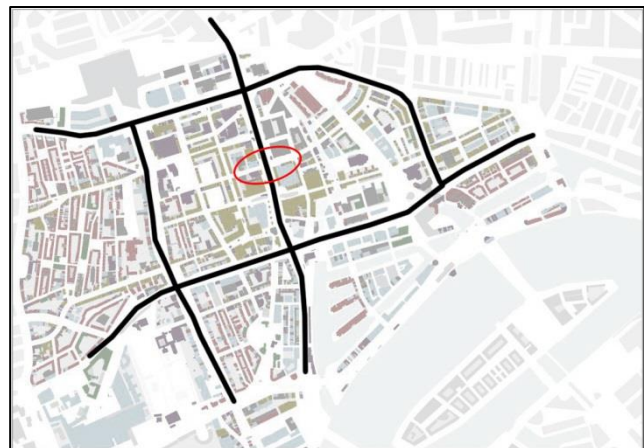


Image 20

In both the strategy and design, the derived elements for improving legibility from literature review, literature study, reference analysis and interviews come together. Naturally not all elements will be suitable in this specific case to improve the legibility but a careful consideration is made in order to come to the best possible design solution.

1.9 Planning & Guidance

The graduation project started in February 2014 and will be completed in June 2015. The schedule will be used to maintain an overview of the different phases and deadlines of this graduation project, in relation to the work that has to be done and the methods that must be used.

Normally a graduation project has a timespan of one year. In this particular case the graduation period is extended with half a year. The reason for this, as can be seen in the

schedule, is that the P2 presentation in June 2014 resulted in a No Go. Due to interesting literature and no structured time schedule, time flew by without making any real progress. This is the perfect example why such a schedule is important to make and to use it as guidance. Choices have to be made and a clear schedule, which shows the important deadlines, can help with this process.

For the upcoming half a year the intention is to make a weekly planning in which is described what has to be done that week and what should be finished at the end. In order to deliver the intended design and research products at the end of June, this is the only way to really structure the workload and not to postpone things until the end. This insight comes from working on this Thesis Plan and the realization that still a lot of things were unclear before writing and image that had to be made.

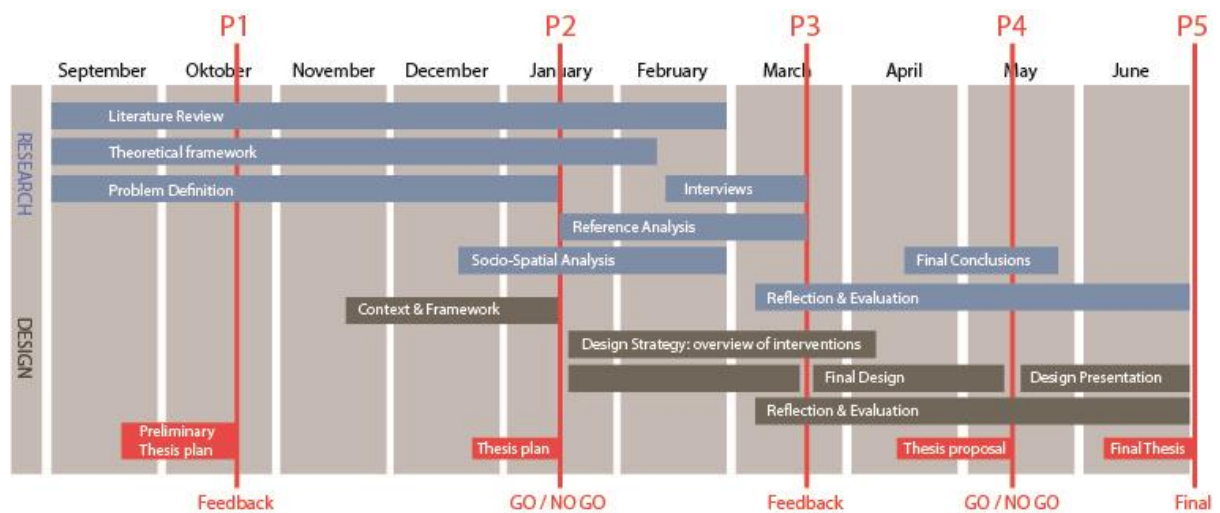


Image 21

Guidance

As a first mentor of this graduation project, Egbert Stolk is chosen from the chair of Environmental Technology and Design.

As a second mentor of this graduation project, Birgit Hausleitner is chosen from the chair of Urban Design – Theory and Methods.

The study in which the graduations project takes place is the one of Urban Fabrics.

2. Theoretical Framework

As mentioned above, the topic of the graduation project is the improvement of the legibility of the city center of Rotterdam. In order to get familiar with the theories about the notion a literature review, as mentioned in the section methodology, is made. Here in the chapter theoretical framework this literature review will be discussed.

The sub question that can be answered after this literature review is the following. What are theories of urban legibility? When researching these theories various considerations are made, for instance which theories to choose.

The notion of legibility was first coined by Kevin Lynch in 1960(Lynch, 1960), which will also be the first theory to look at. Since Lynch was the first to mention legibility this will provide a good starting point for the research.

Kevin Lynch

In his book 'Image of the City', Lynch studied the mental image of a particular city which is held by its citizens. It concentrated on one particular visual quality; the apparent clarity or 'legibility' of the cityscape.(Lynch, 1960)

By this, the ease with which its parts can be recognized and organized into a coherent pattern is meant. A legible city would then be one whose elements are easily identifiable and are easily grouped into an overall pattern. (Lynch, 1960)

Lynch asserted that legibility is crucial in the city setting but by no means the only important property of a beautiful city. It is however of special importance when considering environments at the urban scale of size, time and complexity. (Lynch, 1960)

In order to come to highly legible and imageable city environments, Lynch identified five key environmental components people tend to use to structure a representation of a city. He believed that the visual accessibility and the prominence of these five elements were the design criteria to

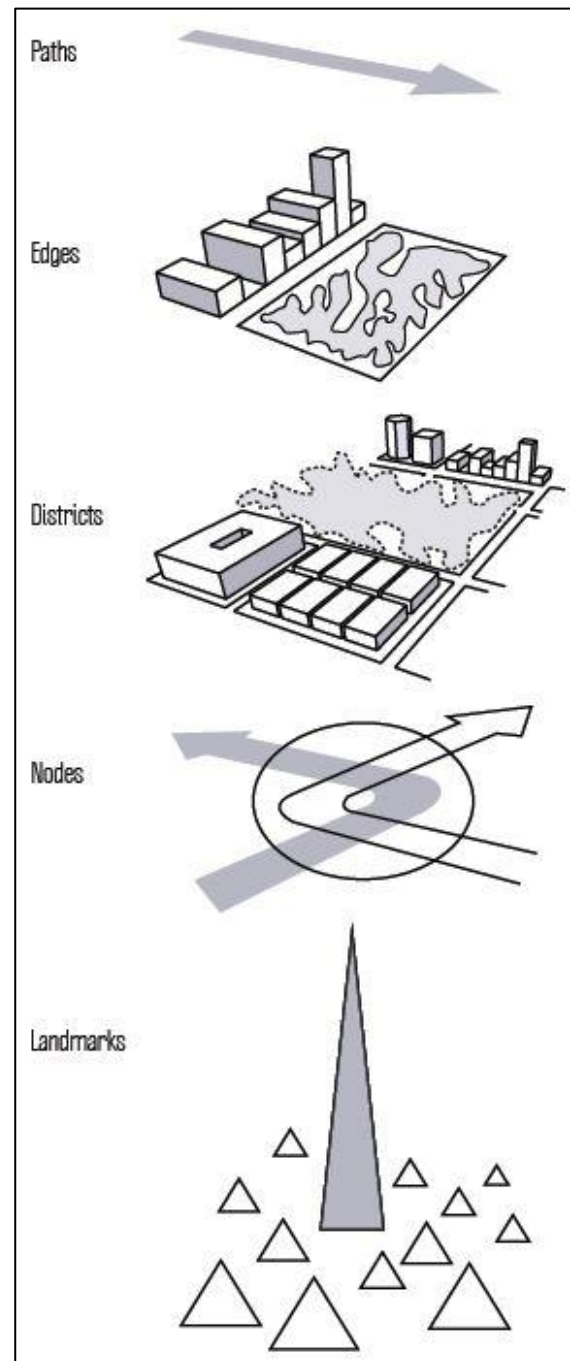


Image 22

design highly legible cities. (Arthur & Passini, 2002)

The five elements Lynch identified are the following: paths, edges, districts, nodes and landmarks. (Image 21)

- Paths are the channels along which the observer customarily, occasionally or potentially moves. They may be streets, walkways, canals or railroads.
- Edges are the linear elements which are not used or considered as paths by the observer. They are the boundaries between two phases, linear breaks in continuity; shores, railroad cuts, walls.
- Districts are the medium to large sections of the city, which the observer mentally enters 'inside of' and which are recognizable as having some common, identifying character.
- Nodes are points, the strategic spots in a city into which an observer can enter, and which are the intensive foci to and from which he is traveling. Examples can be primary junctions or places of a break in transportation.
- Landmarks are another type of point-reference but in this case the observer does not enter within them, they are external. It is usually a rather simply defined physical object: building, sign, store or mountain. However, they also can be local, being visible only in restricted localities and from certain approaches. Signs, trees and other urban detail. (Lynch, 1960)

Donald Appleyard

Second theory that will be looked at is the one of Donald Appleyard, urban designer and mainly interested in environmental perception. Appleyard is one of the co-authors of Lynch on the book 'the view from the road' and therefore a good place to look for additional elements which can help improve legibility.

In his paper 'Why buildings are known', Appleyard describes an extensive research that took place in the city Ciudad Guayana. Over 300 people were interviewed related to their perceptions of the city. All buildings, establishments and other landmarks recalled by the inhabitants in response to three questions were recorded, photographed and scaled for the presence of an array of attributes which the investigators hypothesized might be critical to their identification and recall. A subdivision was made between free verbal recall, free map recall and free trip recall. (Appleyard, 1969)

Their major assumptions were that an inhabitant would recall a building or place for some combination of four reasons: "1. The distinctiveness of its physical form, that is its 'imageability' (Lynch, 1960), 2. Its visibility to him as he travels around the city, 3. Its role as a setting for personal activities, use and other behavior, 4. The inferences he makes about its cultural significance to the population at large". (Appleyard, 1969, p. 134) Here it becomes clear that the elements of Lynch were merely orientated on geometrical features and Appleyard was the first one to incorporate symbolic, personal, cultural and other features which ensure remembering and therefore increase legibility.

First point, the component attributes of buildings predicted as contributing to their imageability, were the intensity and singularity of their apparent movement, contour, size, shape, surface, quality and signs. See image 22 and 23 in which the verbal and graphic rules are elaborated upon further. The intensity of each attribute is of course an absolute measure of its presence although the scale was calibrated to fit the city of Ciudad Guayana. Therefore, buildings with three or more story floors were given high rating for size because they were among the highest and largest buildings in the city. (Appleyard, 1969) However, in a city as big as Rotterdam for instance these buildings would receive a low rating.

FORM INTENSITY SCALES (verbal rules)

	Low	Medium	High
Movement	No movement.	Potential movement, parked cars, few people.	Many people, moving cars, flags waving, water falling.
Contour	Slurred boundaries hidden by vegetation attached to other houses.	Semidetached corner buildings.	Isolated buildings with sharp contours.
Size	Single-storey buildings: houses.	Two-storey buildings: movie houses.	Over two-storey buildings: industrial sheds, steel mill, General Electric.
Shape	Simple.	Two or three block buildings.	Complex building divided into several parts.
Surface	Plain white.	Colored.	Brightly contrasted colors and textures.
Quality	Bahareque (wattle), mud floors outside, no fences.	Modest materials, walls, garden.	Landscaped, fenced, expensive materials, clean conditions.
Signs	No signs.	Small signs.	Large signs readable from a distance.

Image 23

FORM INTENSITY SCALE (graphic rules)

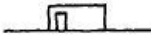
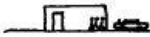


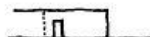
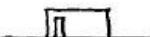


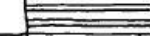


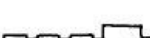









	Low	Medium	High
MOVEMENT			
CONTOUR			
SIZE			
SHAPE			
SURFACE			
QUALITY			
SIGNS			

Image 24

Second, unless a building is seen, it cannot project an image. Visibility is therefore a necessary component for recall. It is a measure dependent on the location of a facility and on the focus of the city inhabitant's actions and vision. The visibility of each building in this research was measured by three component attributes:

1. "Its viewpoint intensity, which is an estimate of the numbers of people who might regularly see it from its most commonly used viewpoint.
2. Its viewpoint significance, which is its presence at important decision points or points of transition on the city's circulation system.
3. Its immediacy, which stands for a measure of its distance and centrality in the line of view". (Appleyard, 1969, p. 136)

This is shown in image 24 in which the visibility scales described above are listed.

VISIBILITY SCALES			
	Low	Medium	High
Viewpoint Intensity	Visible from tertiary roads.	Visible from main roads outside urban area, secondary roads in city.	Visible from main east-west road, Puerto Ordaz to San Felix, main pedestrian centers.
Viewpoint Significance	Visible at points of no transition or at decision points on tertiary roads.	Visible at secondary decision points, bends, etc., on major roads, or major decision points on secondary roads.	Visible at major decision points, intersections, bus stops, ferry landings on major roads.
Immediacy	Distant objects, poorly seen on main roads, or near objects off axis on secondary and tertiary roads.	Near objects off axis, distant objects on axis on major roads, or axial objects on secondary roads.	Near objects on axis, cutting across line of vision on major roads.

Image 25

SIGNIFICANCE SCALES			
	Low	Medium	High
Use Intensity	E.g., bars, abastos, primary schools.	E.g., small supermarkets, small hotels, clinics.	E.g., commercial zones, warehouses, churches, schools, hospitals, bus terminals, etc., banks, steel mill.
Use Singularity	Local singularity, e.g., bar, repair shop.	Community singularity, e.g., primary school, dock, bus terminal.	City singularity, e.g., police station, hospital, C.V.G. office building, cemetery, radio stations.
SYMBOLISM cultural, economic, aesthetic or historical, (in addition to use intensity or singularity).	High use and high or low symbolism, e.g., schools, churches, office buildings.	Medium use and high symbolism, e.g., factories, police stations.	Low use and high symbolism, or high use and very high symbolism, e.g., hydroelectric dam, radio station, statues, steel mill.

Image 26

Finally, the third and fourth reason, the community significance of each facility was assessed by use intensity; by use singularity, a scale performing a similar role to that of physical singularity; and by its social, political, economic, aesthetic or historic symbolism. (Appleyard, 1969) In image 25 these significance scales are listed with examples.

Appleyard goes to say that the evidence supports the contention that all the elements of the urban environment – point, linear and areal; or landmarks, nodes, paths, edges and districts, as stated by Lynch, described above, are known for some combination of their form, visibility, use and significance. This means the mere implementation of Lynch elements will not suffice in making a city more legible.

Reginald Golledge

If we look at another field of profession, namely that of geography, we can see that also here research is being done in human wayfinding. What Lynch, and Appleyard in lesser extent, named the (mental) image, Reginald Golledge called the cognitive map. (Golledge & Spector, 1978) This concept, which was coined by Tolman (Tolman, 1948), is used to specify the internal representation of spatial information.

So despite varied terminology used to describe this internal representation, it is commonly agreed that they, being the cognitive map, consist of points, lines, areas, and surfaces. (Golledge, 1999) Which Lynch and Appleyard, both described above, already pointed out. (Appleyard, 1969, 1970; Lynch, 1960)

These elements are learned, experienced and recorded in quantitative and qualitative forms. When qualitatively encoded they provide information on order, inclusion, exclusion or other topological relations. The geometrical structure of knowledge thus includes points, such as landmarks or reference nodes; lines, including

routes, paths and tracks; areas, which could be regions or neighbourhoods; and surfaces. (Golledge, 1990) Image 26

Knowledge of spatial structure			
Points	Lines	Areas	Surfaces
A. Landmarks as organizing concept	A. Lines as boundaries/edges (e.g., Zannaras' perceptual neighborhoods; Lynch's districts)	A. Areas as 2-D spatial classification devices	A. Physical topography
Landmark identity		Regions	Slope or gradients
Landmark location		Neighborhoods	Continuities or breaks (erosion)
Landmark dominance		Communities	Elevation
B. Landmark as navigation aid	B. Lines as routes	Urban places	B. Density (population)
Landmark as choice point	Crow-fly distances and connections	Arbitrary (political) districts	Peaks and sinks in preference surfaces
Landmark as origin or destination	Over-the-ground connectors (paths)	Fragments in cognitive maps	Shape or pattern templates
Landmarks of route orientation node	Length (total and segment)	Shape or pattern	Easy or difficult to negotiate
Landmark as regional differentiating feature	Linearity or curvature	B. Areas as cognitive concepts	
Landmarks as home bases (for path integrations or homing vectors)	Directionality to or from anchors	Superordinate frames (e.g., Reno versus San Diego)	
Landmarks as onroute choice points	Retrace constraints	Containers of layouts of landmarks and points	
Landmarks as priming features influencing expectations	Networks or connectivity	Tools for experiencing learning	
	Methods of parsimoniously experiencing areas (e.g., search results)	Uniform regions	
		Nodal regions	

Image 27

This spatial knowledge or information appears to exist in several levels. At the fundamental level, humans experience and learn names or identities of features; the location of features or places; and the size, magnitude or frequency of occurrence of features or places. (Golledge, 1990) This level is bounded by the way of knowing or the type of experience by which knowledge is gained. It is also influenced by the legibility and familiarity of bits of information. At this fundamental level awareness is gained of the shape or pattern of spatial distributions of features or places. Examples being landmarks, shops or houses. (Golledge 1999)

As can be seen above in the literature of Golledge, landmarks are an important element and can be defined in multiple ways. For instance strategic foci toward or away from which one travels or significant physical, built or culturally defined objects that stand out from their surroundings. Whatever the definition, landmarks often act as signification primers for other features or actions. (Golledge, 1999) Besides this, landmarks are often noticed and remembered because of dominance of visible form, peculiarity of shape or structure or because of sociocultural significance. (Appleyard, 1969, 1970)

Whether defined quantitatively or qualitatively, landmarks usually act as anchor points for organizing other spatial information into a layout. They may have visual dominance such that surrounding features can be most easily described by relating their locations to the

nearby landmarks. Landmarks thus may act as primary organizing features in cognitive maps by dominating a spatial classification process to facilitate environmental knowing and understanding. Golledge with his colleague Spector suggested therefore an anchor point theory of environmental knowledge acquisition in which locations, features, path segments or familiar districts anchored cognitive maps and influenced the encoding, storage and decoding processes used when accessing stored information in a decision making context. (Golledge & Spector, 1978) An example of how this works is given in image 27.

Stephen and Rachel Kaplan

Rachel and Stephen Kaplan are both psychology professors at the University of Michigan, specializing in environmental psychology. However, also one of their topics is the research of cognitive maps and the way people structure their knowledge.

Stephen Kaplan has described four domains of knowledge that people need in processing the environment. (Kaplan, 1973)

- 'Recognition: This includes the bias towards making sense out of the perceived environment, and the bias towards interpreting new events in familiar terms. There is thus a bias towards simplification built in here;
- Prediction: The enjoyment involved in guessing about possible outcomes in uncertain circumstances. The interest in extending one's knowledge of what leads to what;
- Evaluation: The delight in dividing up the world into good guys and bad guys. The discomfort generated by ambivalence;
- Action: The exercise of skill, to act in such a way as to have predictable results. The concern to make a difference. The possibility of exercising choice from among alternatives, of being decisive. The knowledge that the environment is responsive, at least to a degree, to actions one could take.' (Kaplan, 1973)

To translate these human needs to more concrete measures which can be implemented Kaplan & Kaplan created a framework with four factors, which is shown on the right in image 28.

To explain the image further some examples will be given for each factor.

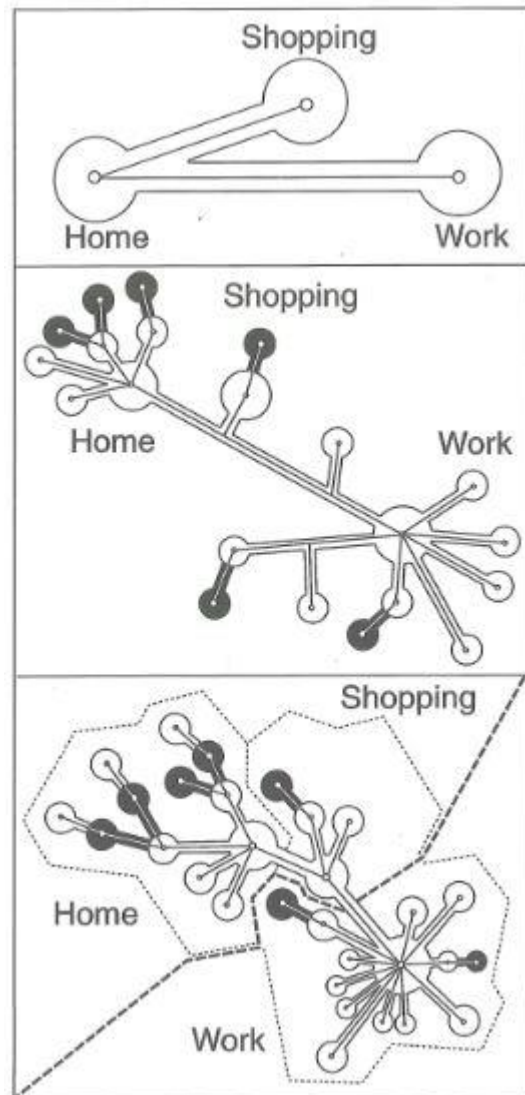


Image 28

Coherence: A coherent setting is orderly; it is organized into clear areas. Coherence can be increased by having some repeating themes and unifying textures, like buildings with same height, materials, symmetry. A limited number of contrasting textures is also helpful.(Kaplan, Kaplan, & Ryan, 1998)

Complexity: Complexity is somewhat the opposite of coherence. However, this does not mean that a highly coherent setting cannot also be very complex. Complexity is needed in our streetscape to give us new information and stimulate our senses.(Kaplan et al., 1998)

Legibility: This is of course the topic of Lynch his theory and Kaplan & Kaplan use the same explanation. In a legible place, one can image finding one's way. To increase legibility, a scene has to have some memorable components that help with orientation. A single landmark or an area that is distinctive makes this more straightforward. (Kaplan et al., 1998)

Mystery: A legible street, described above, is clear. However some mystery is desired. The desire to explore a place is greatly enhanced if there is some promise that one can find out more as one keeps going. A curved path is often more attractive than a straight one.(Kaplan et al., 1998)

Juval Portugali

Fifth and last theory that will be looked at is the article of Haken & Portugali; The face of the city is its information in which they discuss what makes elements of the city recognizable and imaginable.

They ask themselves the following question; What makes an object an external representation and what makes it better perceived and/or remembered? (Haken & Portugali, 2003)

Their answer is that the various elements or artifacts, as they call them, embody and convey information. Some elements, including those that compose the face of the city, are quantitatively and qualitatively more informative than others and are therefore more legible and better perceived and remembered.(Haken & Portugali, 2003)

In other words, one can say that the face of the city is a message and as a message it conveys and transmits different quantities of information. In this literature review we will pass over the manner in how this quantity of information is measured, however Haken & Portugali have set up an table in which the elements that make up the face of the city are divided according to the amount of information they poses.

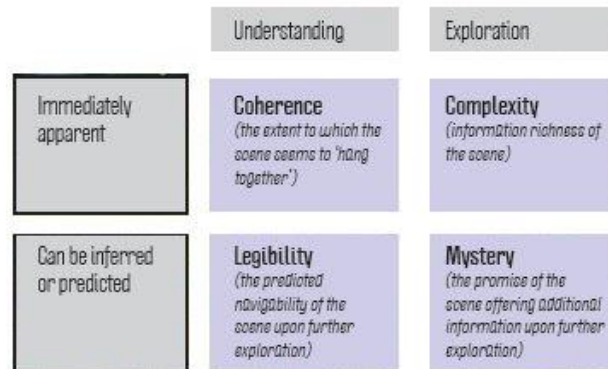


Image 29

As seen in image 29 below the two main categories are unique and redundant artifacts. Unique artifacts refer to urban patterns that because of their uniqueness have a high value of information and are therefore better remembered than other patterns. On the other hand, redundant artifacts would refer to urban artifact that,

because of redundancy and repetition, form a category with the properties as noted in the image. An easy way to distinguish them is by reference to their scale. (Haken & Portugali, 2003)

Redundant artifacts	Outdoor furniture	These include pavements, benches, streets' lights, telephone booths, bus stops, underground/ Metro/S-band/Subway, signs, trees and also moving elements such as buses, trams, trains, etc. Thus one can talk about a typical London bus or underground station and so on.
	Buildings	Buildings are among the most redundant and repetitive of the urban elements. And despite the fact that they are not all identical, they still form categories to the extent that one often speaks of a typical Parisian building or a typical Tel-Avivian residential house.
	Urban scenes	Here we refer to a configuration of buildings, "urban furniture", roads, etc. that together form a scene typical to a certain city.
	Road network	New York, for example, is typified by its 'iron grid' road network, while the Old City of Jerusalem by its winding streets and alleys. In both cases one might find it difficult to recognize one street from the other, but the general character of all streets is easily recognized and remembered.
Unique artifacts	Geometrically unique	The five elements suggested by Lynch (Fig. 2) provide a good example here. Their uniqueness and prominence in the city result from being geometrically and thus visually different from their environment.
	Symbolically unique	Here we refer, on the one hand, to geometrically unique elements that have become a symbol of their city. Eiffel Tower in Paris has become a symbol of its city (but not Tokyo Tower which is a "copy" of its Parisian brother), the Empire State Building and the Statue of Liberty have become symbols of New York, while the Corcovado with the Statue of Christ the Redeemer, the symbol of Rio de Janeiro. On the other hand, complexes such as Westminster with its Big Ben in London, the Arc de Victoire in Paris and the Copa Cabana in Rio de Janeiro, have become a symbol of their cities despite the fact that geometrically and visually they are rather common and not very distinguished.
	Legendarily unique	This sub-class refers to elements such as the <i>Balcone di Gullietta</i> in Verona, the Via Dolorosa in the Old City of Jerusalem, that we've mentioned above, or the Synagogue of Prague that is associated with the story about the Golom of Prague. What makes these places significant urban artifacts is the legend associated with them.

Image 30

Now the various theories have been discussed and explained, they can be compared to each other to see if there are certain elements that are used by multiple theories.

First, a short recap of all the elements derived from the above discussed literature.

- Lynch his five elements; paths, edges, districts, nodes and landmarks.
- Appleyard with four reason why a building or place is recalled: distinctiveness of physical form or imageability, visibility while traveling, role as a setting for activities, use and other behavior and inferences it makes about its cultural significance.
- In Golledge his anchor-point theory, landmarks are the main elements in the environment people use to find their way.
- Kaplan and Kaplan take a broader look at legibility and assess it as one of the properties an environment should have. An environment contains both coherence as complexity and legibility to mystery.
- Haken and Portugali state that elements can and will be remembered because of the amount of information they embody. Two categories are distinguished; redundant and unique artifacts, which both are subdivided into respectively four and three sub-categories.

Before comparing these elements and properties a notion must be made. Since three different professions are present among these five theories it is difficult to compare them with each other.

However, the element landmarks is evidently present in multiple theories, which shows that this is an element which can be used to guide people through the city and to improve legibility. Be it in a different manner than in the sixties when there were no skyscrapers. The different attributes of buildings described by Appleyard provide a good measure to determine when a building or place is a landmark or not.

In a broader sense, Appleyard and also Portugali have shown that the mere implementation of Lynch his elements will not suffice in making a legible and both lively environment. Here the properties set by Kaplan & Kaplan can provide a matrix in what properties an environment should contain. The environment can be legible however some mystery and complexity should be present to keep people interested.

Conclusions

When we look at the different theories which have been discussed in this literature review the conclusion can be made that the mere implementation of Lynch his five elements will provide a legible environment but not directly a particular lively one. (Haken & Portugali, 2003; Portugali, 2011) Besides this, the five elements of Lynch are mainly concerned with the geometrical features of the environment. However, after reading the literature from Appleyard, Golledge and Portugali it can be said that beside these geometrical features, there are also symbolic, cultural, personal and more features which ensure remembering and therefore increase legibility. (Appleyard, 1969, 1970; Golledge, 1999; Haken & Portugali, 2003)

The elements of Lynch are thus a part of the collection of elements that could guarantee legibility.

Further, if legibility is considered as feature which the environment can pose, there are also the features of coherence, complexity and mystery that need to be considered. These four features will guarantee that an environment is both legible and liveable.

Answer to sub research question.

Before this literature review the question was asked; What are theories of legibility. From the enormous amount of literature written about legibility, processes of wayfinding and cognitive maps, five theories are chosen to be discussed and researched.

These five theories have each different perspectives and elements which they believe are the elements that will enable people to remember the physical environment as accurate as possible in their own mental image or cognitive map, depending from which theory to look from.

The next step to ensure the right elements will be used in the design process, a scheme must be made which shows, what elements are suitable in which particular case. If we believe the perspective of Golledge the implementation of landmarks at strategic nodes will

ensure people walk from landmark to landmark, or at least position themselves according to these landmarks. However, to let them enjoy to walk as well other elements need to be taken into account.

This research also leads to more questions which will be looked at in the next semester. For instance the link between legibility and liveliness. Research has shown that a street of place can be legible according to the above described elements, however, this does not guarantee that this street of place is enjoyable to be in as well. This has to do with the kind of functions there are present in this street or place. What micro-climate is there, and other aspects that need to be taken into account.

Below, the translation from the different theories described above into the physical environment. Which elements can be seen where and in what density.

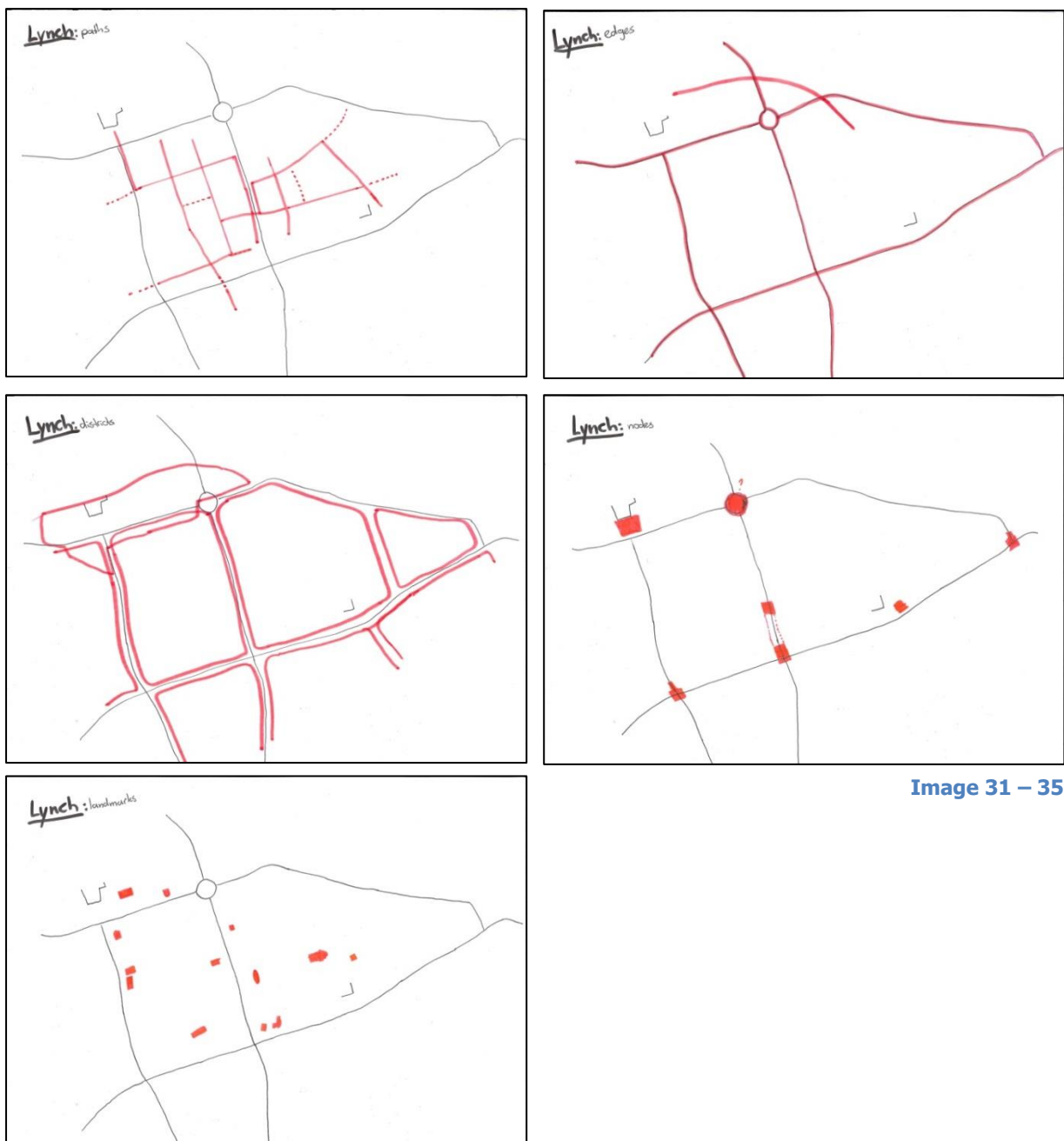


Image 31 – 35

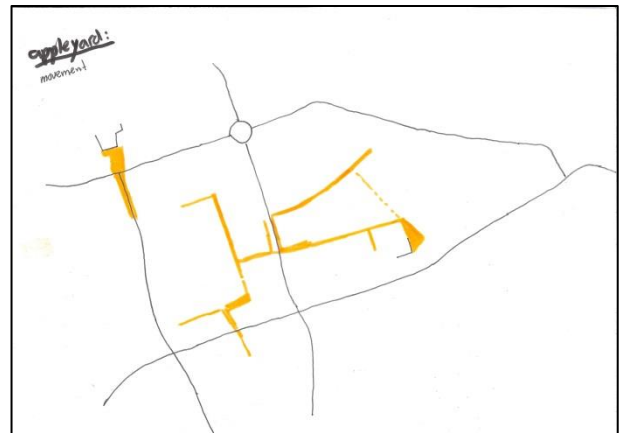
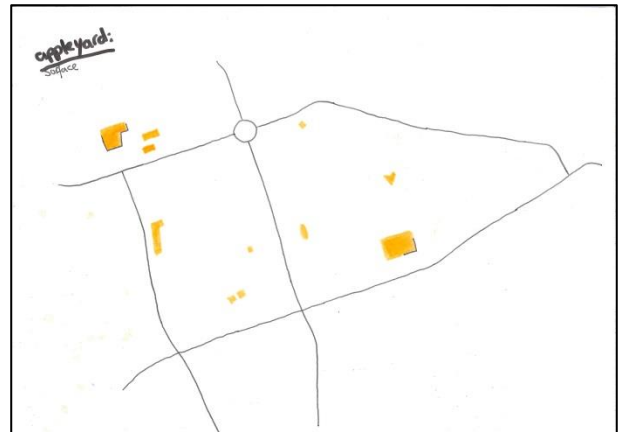


Image 36 - 43

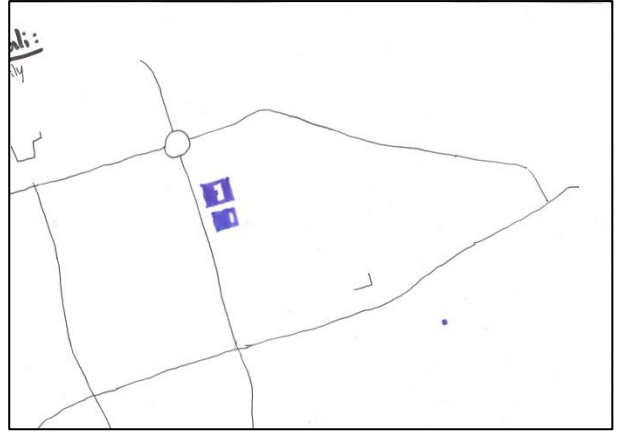
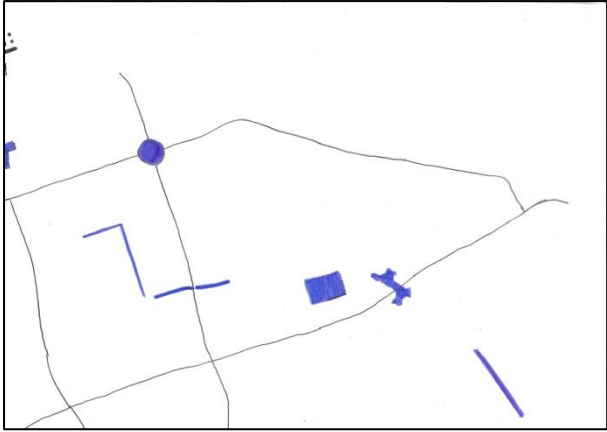


Image 44 - 45

3. Analytical Framework

Rotterdam is of course famous for the devastating bombardments from the Second World War of 1940-1945. On the 14th of May 1940 almost the complete city center is swept away; 24000 houses, 2400 shops and around 4000 other buildings are destroyed.

Urban planner and designer Van Traa is chosen to design the new Basisplan. The new city center will have a rigorous new structure in which the Coolingsingel acts as the new central boulevard. (Image 44)

The separation of functions is one of the new urban insights. Only offices, shops and other central functions are located in the center; housing is designated to the suburbs. The Basic Plan was primarily a road schema and legal framework that offered space for different interpretations. The new road network allows efficient traffic flows from and to the city center. New elements are the business centers in which multiple businesses are located and the shopping center the Lijnbaan, a traffic free pedestrian zone. (Gemeente Rotterdam, 2011)

This new road network is still one of the iconic elements which determine the structure of the inner city of Rotterdam. The other one is the presence of big building blocks.

The principles of separation of functions and infrastructural interventions have affected the connections between the inner city and the surrounding neighbourhoods. In the past, many streets from the surrounding areas went through the city center to the river. Now there is a greater separation, on one side because new buildings have been placed on the old structure and on the other side because large barriers, such as the West Blaak, are constructed. Most historical lines running from East to West are still fairly intact. Most North to South routes have been broken or are in parallel direction with large bundles where the



Image 46

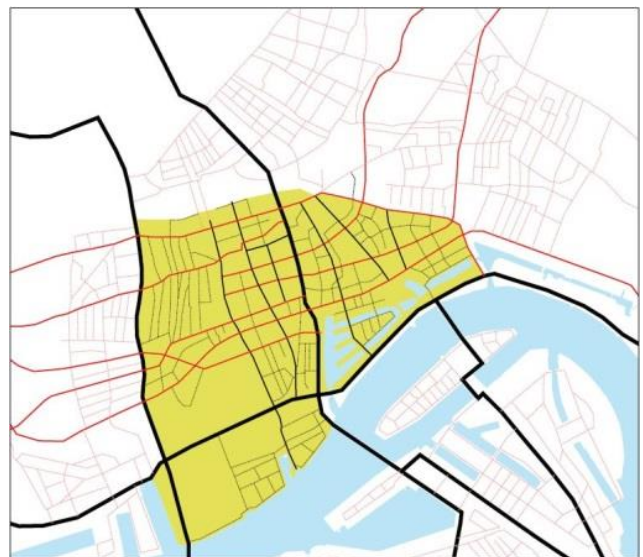


Image 47



Image 48

car determines the domain. (Image 45)

In the past decades huge efforts have been made to undo the principles of function separation. If we look at the inner city at the moment which functions it accommodates we can conclude that the city has been diversified a lot. One notion must be made, this map only shows the functions that are present on the ground floor. Since this is what the people experience when walking through the city, this is more important than the functions on the other floors. (Image 46)

Besides the functions on the ground level the maps shows the concentration and spreading of functions and the difference in grain between pre war and after war development. One conclusion that can be drawn from the map is that the inner city of Rotterdam often consist of one function related spots in which there is little mixure of functions. This can be seen below, in which the different functions have been highlighted one by one.



Image 49

In the above depicted image, (Image 47) it can be seen that for the function of retail no clear distinctions are made between clothing, shoes or other kind of retail. However the shopping areas in the city can be divided into different shopping environments. Shops which are located in, for instance the Laurenskwartier, have a different radiation then shops which are located in of around Schouwburgplein. (Image 48)

Since the topic of the graduation project is the legibility of the city center and because this is connected how people walk through the city itself, it is of importance to know how people,

mainly visitors, reach the city center. Do they arrive by car or public transport, and if so, where are the different stations where they enter the city center? To answer these questions, image 49 shows the different stops or stations from the different methods of public transportation which go through the city center and where one can park his car.

Also here it is clear that the orientation of the city center has been focused on traffic for longer time since the stops for both tram and metro stations are situated on the important and wide boulevards of the city. The Coolsingel, (West) Blaak and Weena are main boulevard where public transportation is located.

Besides knowing where and how people arrive in the city center it is also of utmost importance to know where they walk. In streets and places where a lot of people are gathering or walking, there is clearly something happening. It is therefore interesting to see at which timeframe, which streets are being used, and in what capacity. On basis of multiple research and analysis numbers are combined in order to show which streets are used and which ones are not. Conclusions which can be drawn from these maps is that during the day there is a clear focus on the core shopping areas, the Lijnbaan, Hoogstraat and Binnenwegplein. In the evening and night the most important streets are clustered to places and not to routes. The width of the lines vary to the amount of pedestrians. The widest line mean 30.000 people, the narrowest 1.000. (Image 50 and 51)



Image 50



Image 51



Image 52



Image 53

When these analysis are brought together and are being compared, a variety of conclusions can be drawn. First of all, it is clear that the location of functions has a big influence on the various walking paths. As mentioned above, the Korte Lijnbaan, the Lijnbaan, Binnenwegplein and the Hoogstraat are the four most used paths or routes and according to the function maps these are the street in which most of the retail is situated. During the evening however this pattern changes and is it more connected with the different areas in which the hospitality industry, like bars and clubs, is more present.(Image 52 and 53)



Image 54

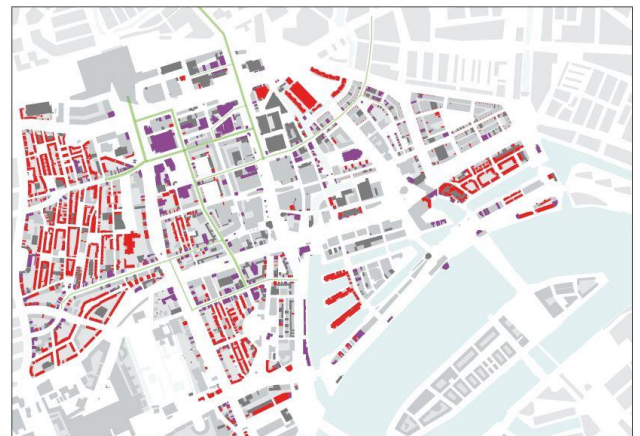


Image 55

If we look at public transportation in combination with the walking paths one can conclude that during the day the metro and tram transport an huge amount of people into the city center. Especially the stations on the Coolsingel are important in the distribution of people inside the city center. Besides this, the Central Station is of course the biggest deliverer of people to the city of Rotterdam. Unfortunately, no numbers have been found for the various parking garages in the city center. It would have been good to see the average amount of cars which are stored there each day to get a grasp on the locations where a lot of people enter the city center. During the evening / night most paths that are used have no direct relation to public transport and therefore only the public transport hubs on Eendrachtsplein, near the Witte de With, and the Coolsingel are used. These two hubs are situated in the vicinity of bars and clubs. (Image 54 and 55)



Image 56



Image 57

When analyzing these different elements of the city that main conclusion is that there are multiple missing links in the city. A major part of these missing links are located on the places where different world collide. The link between car and pedestrians is a fragile one, and the links between the different city kwartieren is not always present. (Image 56 and 57)

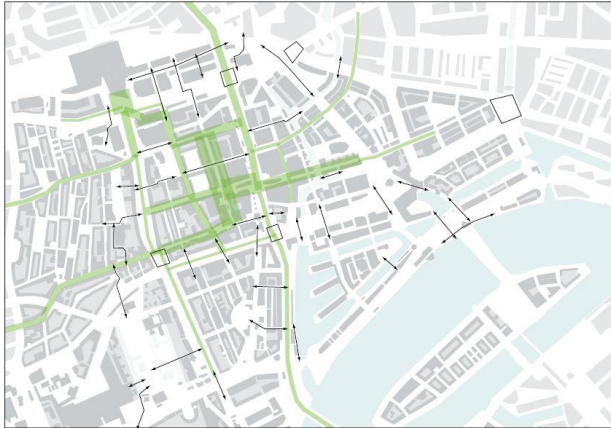


Image 58



Image 59

These missing links result in the fact that there is no such thing as a logical and closed walking circuit. These are several branches on the main structure ((korte) Lijnbaan and Hoogstraat), however a logically concatenated main route is lacking. A well working connection between East and West is missed; the Coolingsels acts as a border.

The various unique shopping environments can therefore be better connector. The goal is a compact and balanced route in which the

connection Meent – Aert van Nes is taking a critical point. In chapter one; the introduction to the graduation project, the reasons for this specific location are already mentioned, but will be explained again.

- First of all, the link between the Meent and Aert van Nes is according to my own perception, one of the most important ones since the Coolingsel is crossing both streets perpendicular. The Coolingsel is the biggest barrier in the inner city between the Eastern and Western part. This barrier is still



Image 60



Image 61

dividing the city into two sections.

The link Meent – Aert van Nes could solve this division. (Image 58)

- Until now, the only working connection between East and West is the Koopgoot / Beurstraverse, which is running under the Coolsingel. By adding / improving the connection Meent – Aert van Nes, the diversity of the urban fabric is increased. This stimulates the development of new routes through the city and the possibility of connecting the different places and atmospheres. (Image 59)
- Third and last reasons is that the existence of this missing link is, in my point of view, in fact the expression of the fragmentation of the policy of the municipality of Rotterdam. The Coolsingel is, next to being a barrier, also the edge between the districts Cool and Stadsdriehoek. (Image 60 and 61) (Between 'stadskwartieren' Lijnbaankwartier/Coolsingel and Laurenskwartier) For each district a separate vision is made, which contains the future goals for that specific district. Because of this, the focus is shifting from a view to the outside to a view to the inside; the connection with surrounding districts is lost / underexposed.



Image 62

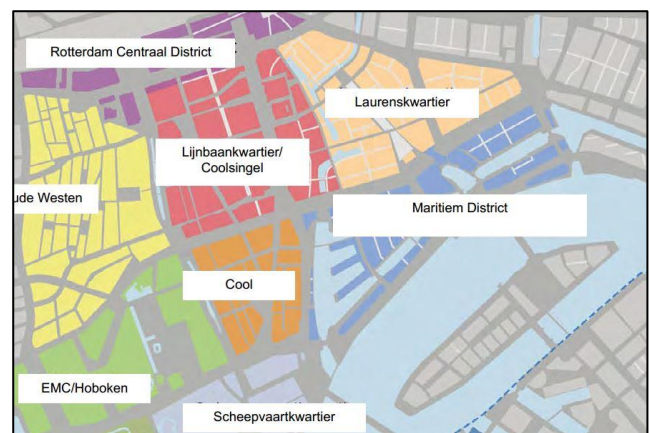


Image 63

These reasons, together with the analysis, gave enough evidence and input to choose this missing link as location for my graduation project. Naturally, the link Meent – Aert van Nes is part of a bigger network of streets, alleys and routes. On the larger scale it can be a section of a route between Rotterdam Central Station and Station Blaak or the Neighbourhood park on the West-Kruiskade to the Goudsesingel. (Image 62 and 63)

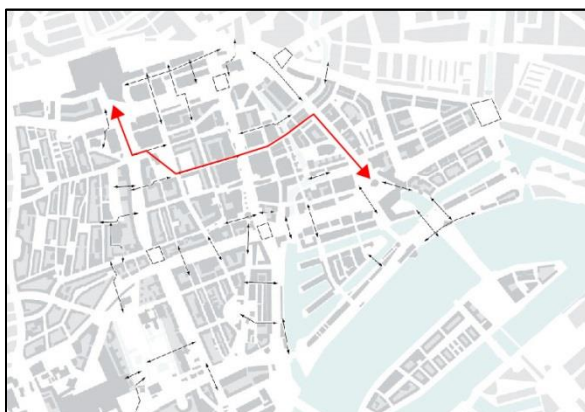


Image 64

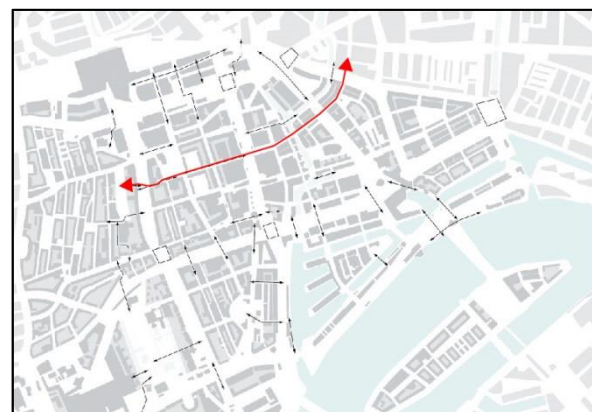


Image 65

4. Reflection

When writing this thesis plan, the graduation year is almost half way and this is a good moment to reflect upon the process so far and to see if the research question with sub questions is still relevant to the graduation project.

With the process so far, mainly the way of working is meant. This has to do with the way of planning the research and using the methods as described above to be able to answer the various sub questions. Looking back on the last half year it is clear the research has been more structured than the first half year of the graduation project (February 2014 – July 2014). However, experience has shown that without a clear schedule, maybe even a weekly schedule, the process of gathering knowledge and doing research is unstructured. Therefore, for the coming period the intention is to start every week with a program for that week. What research will be done, what outcomes does this have and how can these outcomes be processed into physical deliverables. By doing this, a better insight is gained in the process itself but also time wise. At this moment, when looking back on the last half a year, especially progress has been made in the way the story is structured, where the problem comes from and how this can be shown through analysis. However the theoretical framework in which research has been done on the notion of legibility has been lacking. The elements from the various theories were already known in the beginning of September, which would have left plenty of time to do other research such as linking legibility to liveliness or the micro-climate of places. But due to the postponement of for instance the literature review time was wasted on other things.

This insight can be seen as well when looking at the sub questions. Of the 8 sub questions, only 2 or 3 can be answered. In order to answer the other 6, still more research has to be done. Case / reference study in order to learn from other cities and examples. Interviews in order to gain insight in how visitors move through the city and what kind of elements they use to guide their way. And of course the actor analysis, which is important to keep the link with reality. What actors are involved and what influence, and especially, what wishes do they have on and for the research area.

From the problem statement it will be clear that the municipality is putting its efforts in making the city more legible. From various talks with designers and urban planners at the municipality it shows that they are really working on improvements. However their focus is of course different than mine. Which is logical if you consider all the stakeholders they have to work with. Legibility is not a main theme, and therefore this research is being done.

From the literature review it is clear what theories there are about legibility, and what elements promote this, however the connection to other determining aspects has to be made. Only implementing elements that improve legibility will not ensure that the area of development will also be lively and enjoyable to walk through or stay in. What factors, beside legibility, determine if a street or area is crowded with people? In the next semester an answer needs to be found on this question in order to deliver a final design which takes not only legibility but also other features into account.

5. Design Framework

To be filled

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