

Graduation Plan

Master of Science Architecture, Urbanism & Building Sciences



Graduation Plan: All tracks

Submit your Graduation Plan to the Board of Examiners (Examencommissie-BK@tudelft.nl), Mentors and Delegate of the Board of Examiners one week before P2 at the latest.

The graduation plan consists of at least the following data/segments:

Personal information	
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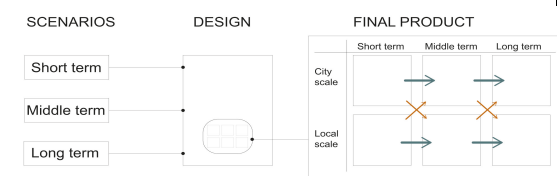
Studio	
Name / Theme	Design of the Urban Fabric
Teachers / tutors	First mentor: Dr. M.J. van Dorst (Environmental Technology and Design) Second mentor: Dr. Ir. L.M. Calabresa (Urban Design) (Third mentor: Pieter Graaff, De Veldacademie)
Argumentation of choice of the studio	From the start of the graduation I wanted to focus this project on the local impact of larger scale infrastructural decisions and interventions. Trying to integrate the city scale with the local persons involved, will bring tensions. Within this studio I can research the existing city structure, and integrate knowledge in a design on both city, and local scale.

Graduation project	
Title of the graduation project	BRIDGING ROTTERDAM: AN INVESTIGATION TO THE LOCAL IMPACTS OF INFRASTRUCTURAL DECISIONS ON CITY SCALE
Goal	
Location:	Rotterdam, De Maas
The posed problem,	Rotterdam has to deal with the pressure on networks caused by population growth and the growing traffic demands. The population is expected to continue growing and climate, social and spatial networks are pressured. Doing nothing will make the city more vulnerable over time. The interrelated aspects in the structures of the city need to meet the demands by a growing population. To meet the growing

	<p>traffic demand and make the infrastructural network of the city more resilient, Rotterdam is planning a new shore connections crossing De Maas. The new city bridge crossing De Maas is a given fact for this research.</p> <p>Of course, this new connection in the infrastructural network is not able to solve all the problems Rotterdam is facing and cannot fulfil all the demands of the citizens. But at this moment, the municipality is looking at the new bridge on city scale and is calculating the capacities of the existing shore connections in the network. It is important to predict the most efficient options and locations for the shore connections for a durable intervention in the existing city network. However, only taking into account the city scale and their flows is a missed opportunity. Using the bridge as a development, as opportunity for further developments on a local scale can create new insights in the rhythm of projects in Rotterdam. In this way the bridge can help to reach other goals set by the municipality as well. The bridge can create highly attractive locations at the landings on the shore line and can please local citizens today.</p> <p>This research will not only be focussed on solving an infrastructural pressure problem; it will be a story of shaping opportunities for further developments, after the implementation of a connecting element in a durable city structure. Hereby, both city scale and local scales are very important for the design of the new city bridge for Rotterdam.</p>
research questions and	What kind of opportunities can a new

	<p>city bridge offer for the development of Rotterdam on different scale levels, dealing with the threats in the existing urban fabric?</p> <p>Sub-questions: What arguments have been used to start the construction process of the existing shore connection in Rotterdam and how does this relate to the arguments for the new city bridge?</p> <p>What are the spatial network demands for a new city bridge and how does this impact the local spatial quality?</p> <p>What demands and expectation do local citizens and end-users have for the new city bridge and how can this be included in a top-down infrastructural intervention?</p> <p>How can the process be structured to bring citizens and municipality closer together to find similarities in demands on the different scale levels?</p>
design assignment in which these result.	<p>The final product contains a document with proper argumentation which is the official reaction on the plans of the municipality. This document contains a design and argumentation.</p> <p>The argumentation is based on the results of the research of this document in the different themes.</p> <p>The design is the result of the research in this document. The design for the new city bridge will show the strategy on city scale for the structures in the city, and a design for local qualities on the</p>

landing and shore lines in the direct surroundings of the bridge. Within the reaction-paper, the result of the new shore connection will be made visible over different time spans. These time spans are corresponding with time horizon based scenarios.



Process

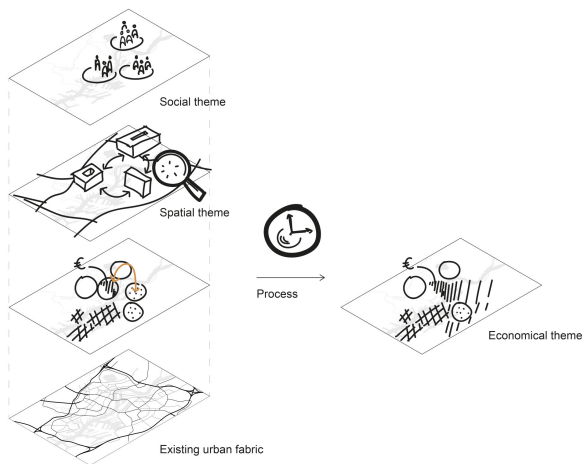
Method description

To be able to answer the main research question and keep the research structured, the research is divided in different theme's connected with sub-questions.

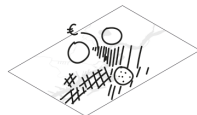
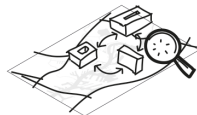
The themes for the research are an economical theme, a spatial theme, a social theme and a process theme. For the design of a bridge these themes are very important components to work with. Looking at the existing urban fabric we can separate different layers of content. Utilization, built environment, public space, the connecting city plan and the land use are part of this layer system (Heeling et al., 2002, p. 18-19). The theme division for this research is based on this layer system and visualized in the figure below. The citizens and end-users of the (surroundings) of the new city bridge are the main ingredients of the social theme. They are determining the utilization of the design. The built environment and the public spaces are the context in which the utilization by citizens takes place. The context is part of the spatial theme. The economical theme is based on the changes in land use over time, and especially covering the arguments for land use changes. Last, changes cannot happen instantly; they always take some time in the complexity of the city. Constructions need to happen and the citizens should find a new way for use and they need to start using the object or patterns, or not. This is all part of the process of change, communication and construction.

For the research four themes are build: a spatial theme, a social theme, an economical theme and a process theme. The goals of the method of working in different theme is to find optimizations for the different aspects in the urban fabric, for the design of a new city bridge for Rotterdam. In this way it should be able to react on the different scale levels. To be able to find conclusions the themes are connected with sub-questions and goals. In the following paragraph the sub-questions, goals and methods per theme are introduced. In the introduction per theme the methods are discussed more in depth.

The relation between the research, the themes, the methods, the design and the result is made visible in the figure.

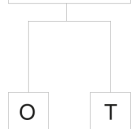


RESEARCH



THEMES

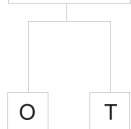
Survey end-users and citizens



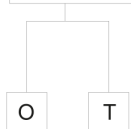
Theory paper
Network analysis
Photo analysis
Traffic engineer



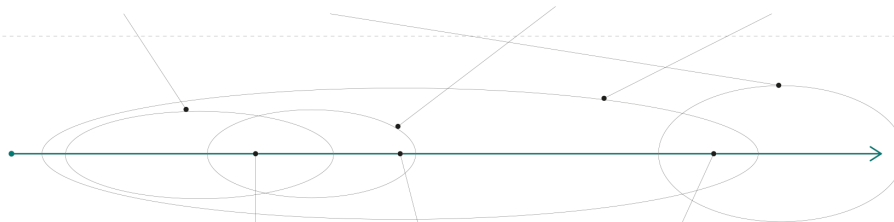
Historical analysis
Land uses



Results social th.
Literature



METHOD & CONCLUSION
(Opportunities and threats)



TIMEFRAME

A

B

C

SCENARIOS



REACTION
Design over time

To find opportunities and threats on different scale levels for the different themes, different methods per theme are used.

For the economical theme a start will be made with an historical analysis of the

design plans of the previous shore connections in Rotterdam. Within this historical analysis the arguments are explored which resulted in the construction of a new bridge or tunnel. The historical analysis is concluded in a timeline, which gives an overview of the time frame of the history of building bridges in Rotterdam. Secondly, a land use analysis will be used to predict the spin—off effects of the new city bridge. The results are compared to the arguments used by the municipality to begin with the process of constructing a new shore connection.

The second theme to discuss is the spatial theme. In an appendix, **the** theory paper is included to discuss the topic of car traffic in the compact or densified city. The paper will form an argument to look at the infrastructural network from a cyclist's point of view. The infrastructural network will be the base to argue different possible locations for the shore connection. Based on missing links in the network, different possible locations will be designated. These locations are analysed on the spatial qualities of the shore lines by a photo analysis. The photos for this analysis are made during a bike-trip along the shore line of De Maas. The photos are used to represent the strengths, weaknesses, opportunities and threats for the different locations. The theme will conclude with the best locations for a new city bridge. To discuss the results and question the outcomes, an appointment with a traffic engineer will be made.

After these two themes, the citizens and possible end-users will be discussed. With a survey the statement of this stakeholder-group is explored. The different shore connections: tunnel, bridge and ferry, will be part of this survey. In this way a comparison between the results can be made and the results will be part of the input for the scenario based design. In the continuation of the design process, a second survey will be conducted to question the local citizens on the location of the new city bridge. In this way not only the opinion of the possible end-users can be included, but also the local citizens are part of the design process and arguments.

The process theme is about the communication between the municipality and the citizens and end-users. The urban designer can be a tool for communication. The role of communicator of a top-down intervention will be explored in this theme, based on literature and the outcome of the social survey.

Scenarios:

The design of a new city bridge should be reacting on both scale levels: the city scale and the local scale level. But all themes and all scale levels are influencing over different times and different levels. To structure the strategic planning and the design, scenarios are made. These scenarios are depended from different time horizons per theme and of different influence levels. These elements are forming the dimensions for the scenario planning. The time span per theme is explained on the following pages.

The scenarios are based on a short time span, a middle time span and a longer time span. All are having different influences per theme, the overlap of influence of

themes is giving the scenario content. The relation between themes over time is visible in a timeframe. For the context of the scenarios the very long time span and the situation tomorrow are included in the time line.

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Reflection

Relevance

Social relevance:

You might argue that Rotterdam South have had a false start. In the 17th century the isolated southern bank of De Maas functioned as residence for plague patients and for criminals. With the opening of the Nieuwe Waterweg in 1872 the harbour started to grow and more and more people from the southern provinces of the Netherlands migrated to settle near harbour employment possibilities. From this moment, a connection between the banks of de river was becoming more important. Because a bridge would form an obstacle for harbour operations, they started operating ferries. The ferry has never been able to truly connect both river banks. The labour migrants from the southern provinces moved away after the take over of the harbour by machines. The area was left to its fate because the absence of a proper shore connection. The neighbourhoods have been taken over by non-western migrants and now many Polish settle in the dynamic southern neighbourhoods of Rotterdam (Strehl, 2008; Tempelman, 2011).

Still today, there are big social and economical differences between the two banks of the river. The municipality wants to bridge the gap and bring people closer and create equal opportunities. Here fore, a special program is developed in collaboration with the national government.

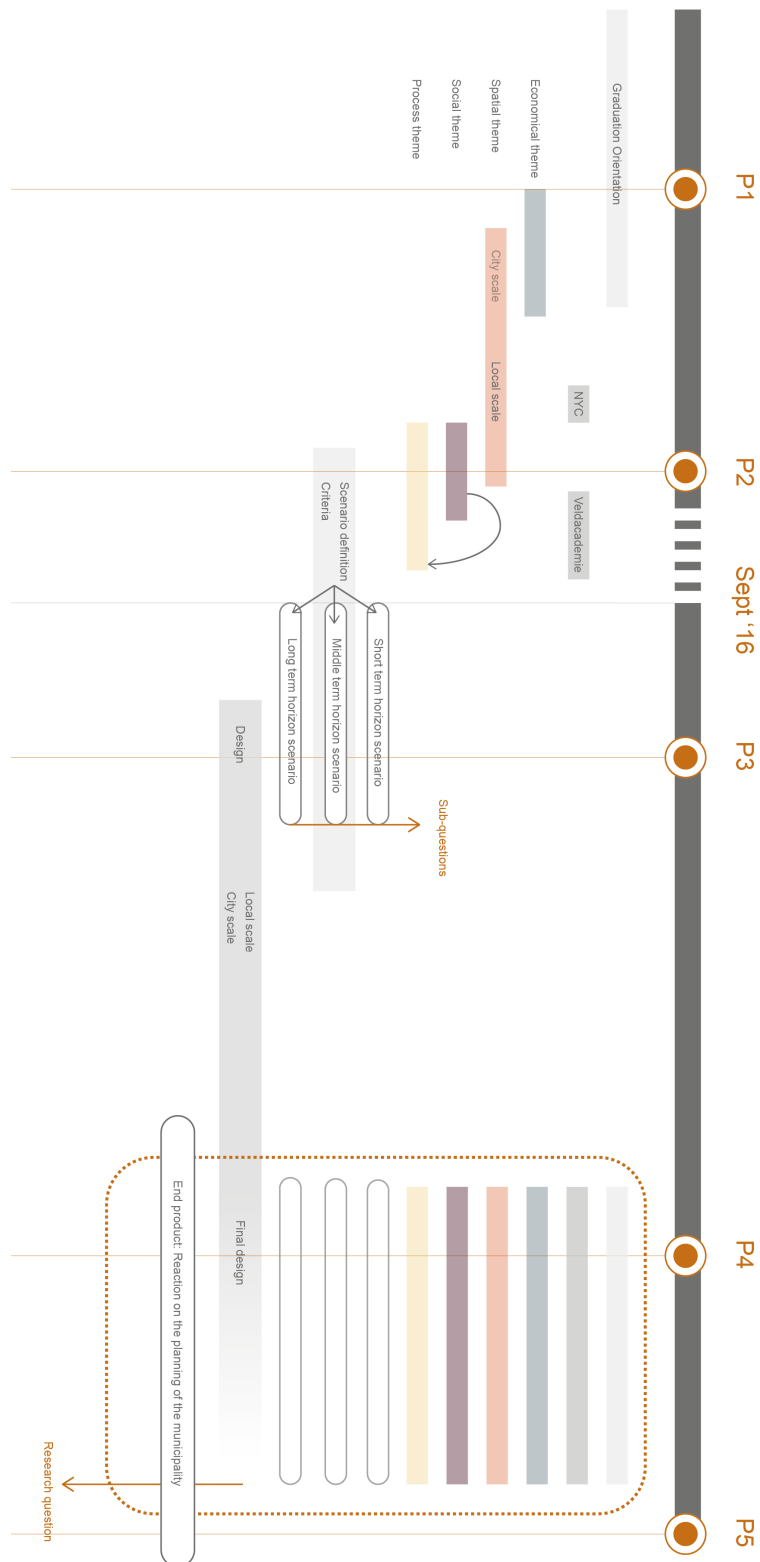
The development of the new city bridge can also be a method to bring people closer together in terms of accessibility. The easier movement patterns between the two river banks should sprawl the opportunities more equal over the city and so stimulate the south bank of the river. However, the bridge seems to be planned according to infrastructural demands for the city and major future events. Of course bridges are creating opportunities for development and those opportunities should be grabbed! But next to the sustainable benefits and opportunities and maybe an iconic value for the skyline of Rotterdam, the construction will have a major effect on current local citizens on both sides of the river. This research will focus on the impact on a local scale and the current citizens of both of the riverbanks.

Scientific relevance:

A city is a complex system. Many literature is written about the complexity of the different layers and we can image that there are relations between improvements, developments, changes, trends and that different aspects are facing influences and impacts form others. Cities are the dynamic context of all these relations and improvements of the living environment.

Within the context of a new city bridge, this research is investigating the relation between the city scale and the local effects.

Time planning



TIME PLANNING

week 24 13-06-16
 week 25 20-06-16
 week 26 27-06-16
 week 27 04-07-16
 week 28 - week 35

P2 Thursday June 16, 2016

Social theme Survey
 Spatial theme Traffic engineer appointment
 Process theme Role designer in process, conclusions
 Economical theme /
 Scenario Definition of scenarios
 Criteria definition

week 36 05-09-16
 week 37 12-09-16
 week 38 19-09-16
 week 39 26-09-16
 week 40 03-10-16
 week 41 10-10-16
 week 42 17-10-16
 week 43 24-10-16
 week 44 31-10-16
 week 45 07-11-16
 week 46 14-11-16
 week 47 21-11-16
 week 48 28-11-16
 week 49 05-12-16
 week 50 12-12-16
 week 51 19-12-16
 week 52 26-12-16
 week 1 02-01-17
 week 2 09-01-17
 week 3 16-01-17
 week 4 23-01-17
 week 5 30-01-17

Start time term horizon scenarios Short term
 Middle term
 Long term
 Start combination in 1 design Criteria
 Story line design over time
 Scale levels
 Design Criteria
 Design changes of time

Reaction on the planning of the municipality
 Combination of all themes, scenarios and the design

P4?

P4?

Finalizing products, visualisations, models
 Reaction on the planning of the municipality (continuation)

P5?