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Graduation Plan: Delta urbanism

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:

<table>
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developments at Kop van Zuid made sure that the two parts of Rotterdam came together and made it possible for people living on the south side could travel easily with or without public transport to the other side. Growing up in the neighborhoods Feijenoord, Heijplaat and Carnisse, I definitely see that its about more than just mega projects on the waterfront of Rotterdam. There are still too many neighborhoods in Rotterdam that require redevelopment and not just the post-industrial ports on the waterfront. In addition we have the global problem of climate change that can have negative effects on the city of Rotterdam because of its position in the delta. As an urban designer and resident of my city, which I am still proud of, I see an important task to protect and adapt Rotterdam for climate change. So my motivation comes from my city, that have besides strengths also some weakness, that needs adaptive design solutions against climate change in terms of water that at the same time also result in attractive neighborhoods.

<table>
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<th>Graduation project</th>
<th>Water as a connecter - A coherency between strategic planning design in waterfront and urban revitalization</th>
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<tr>
<td>Goal</td>
<td>Climate change in terms of water is a global phenomenon which can effect the urbanized delta in a negative way. Because of the position of Rotterdam in the Rijnmond region, the delta city is very vulnerable for water threats. Rotterdam as one of the largest port exposes itself to these vulnerabilities and economic damages. The development on the waterfront in post-industrial areas of Rotterdam gives the city its economic status and image. However, this image of a booming city is not applicable in the whole city of Rotterdam. Based on the leefbarometer, which measures the vitality in cities, shows that neighborhoods in the Rotterdam are still declining or do not even improve after secure policies from government and municipality. In the current situation of planning most stakeholders do not expand their</td>
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private planning situations, which results in not well planned land uses. Land uses are mostly not equally divided, a reexamination on spatial planning strategy is required where different stakeholders have a common interest in redevelopment of land uses in both waterfront and neighborhood. Therefore these processes can not be seen as individual.

The explanation above can be summarized in three main objectives this thesis will focus on:
1. We have the problem from climate change in terms of water where the necessity is to make our delta climate adaptive.
2. We have the problem of recent waterfront development where strategic planning of land use is segregated between high- and low income group.
3. We have the problem of neighborhoods in Rotterdam that are still declining due to the low income groups.

research questions and

RESEARCH QUESTION + SUB QUESTION

Main question

How can we use water in spatial design in such a way that the Rotterdam delta is climate adaptive and the socio-economic processes in waterfront and deprived neighborhood are enhanced as a whole for future growth and improvement of quality of life in the city?

Sub question
1. What is climate adaptive in terms of water and how can this add to quality of life in the city?
2. What is a deprived neighborhood and how does this apply for Rotterdam?
3. What is the current situation in Rotterdam in
4. What can we learn from other waterfront cities (port cites) and what spatial features and design principles can we use in the project?  
  - Case studies Kop van Zuid, Pittsburgh and Newcastle
5. What are the spatial challenges of climate adaptation in waterfront and deprived neighborhood in Tarwewijk, Schiemond and Delfshaven?
6. How can we design spatial interventions in Tarwewijk, Schiemond and Delfshaven related to a interaction between waterfront related environment and deprived neighborhood.
7. How can the solutions of these interventions be related to Rotterdam as a climate adaptive city as a whole.

The goal within this project is to find an coherent process between waterfront redevelopment and urban renewal that will will be able to enhance future growth in Rotterdam as a whole which in turn will strengthen the socio-economic processes and quality of life. This will also strengthen the identity of Rotterdam in the Randstad. In order to achieve that, the role of water is reconsidered as an asset and power for the area. For This, the (re) design of water related landscapes is required to create extensive used landscapes and improve social interaction, which includes all groups of income, among social groups that contributes to the quality of live.

The outcome of this thesis will be design principles where an attractive water management is used in an integrated strategy for both waterfront redevelopment and declining neighborhood in Rotterdam. In this outcome water will be the focus in design that is seen as a strength rather than a threat. Different scales will be used to develop a design strategy that takes into account urban vitality and public accessibility in a wider context. The design will hopefully create and introduce a new opportunity and policy to develop en redevelop attractive neighborhood and water fronts as one integrated planning process with climate adaptive solutions. The final outcome is able to contribute to current policies, for future growth and improvement of quality of life in Rotterdam as a world wide important port city.

This thesis is a research by design project. This research can be applied in five stages: Research Clarification, Descriptive Study part I, Descriptive Study part II, Prescriptive Study and Concluding and Reflection(Blessing, T.M. & Chakrabarti, A., 2009). The relationship between each other is illustrated in
Part A: Research Clarification - Literature study

Question one and two can be answered in the Research Clarification (RC) stage. The aim is: “to find some evidence or at least indications that support their assumptions in order to formulate a realistic and worthwhile research goal. They do so mainly by searching the literature for factors that influence task clarification and product success, in particular those factors that link the two together. Based on the findings, an initial description of the existing situation is developed, as well as a description of the desired situation, in order to make the assumptions underlying each of the descriptions explicit” (Blessing, T.M. & Chakrabarti, A., 2009). With the outcome of this research some criteria can be formed that support the background in this thesis. By answering question one and two will give me clear insight in the definition of climate adaptive in terms of water and general trends in urban renewal which can result as a theoretical backup for question five.

Part B - Descriptive study I - Analytical study

Sub research question three and four can be answered by a Descriptive study (I). The descriptive study focus more one the influencing factors of the existing situation. “The intention is to make the description detailed enough to determine which factor(s) should be addressed to improve task clarification as effectively and efficiently as possible (Blessing, T.M. & Chakrabarti, A., 2009). The outcome of the analytical data reveals the typical characteristics insufficiency or sufficient of spatial qualities to be enhance in waterfront and deprived neighborhood in Rotterdam. The study of the current situation in question three will be done by mapping that will define three interesting districts. Analysis of the chosen district, which is also done by mapping, define what is needed to improve in terms of water that ensures the quality of space.

Part C: Descriptive study II - Empirical study

In question four, a case study will be used that define design principles that lack in Rotterdam and formulate design principles that applies on the three selected district. The point of departure of this stage is to use the increased understanding of the existing situation to correct and elaborate on their initial description of the desired situation (Blessing, T.M. & Chakrabarti, A., 2009). This description will lead to specific guideline on water management for climate adaptation in the three selected district that intent to improve the quality of the problem definition which is gained in the Descriptive Study I.

Part D: Prescriptive study - Assumption, Experience and Synthesis

Subquestion five and six can be answered by In the Prescriptive Study stage. This part investigate the impact of the support and its ability to realize the desired situation (Blessing, T.M. & Chakrabarti, A., 2009). This part questioned whether the guidelines can be use and what way to encourage and support processes as a whole for future growth and improvement of quality in life in the city.
The answer of sub research question seven will be a conclusion of how water can be used in spatial design to enhance the socio-economic processes of waterfront and declining neighborhood that reflects on the city of Rotterdam as a whole.

How can we use water in spatial design in such a way that the Rotterdam delta is climate adaptive and the socio-economical processes in waterfront and deprived neighborhood are enhanced as a whole for future growth and improvement of quality of life in the city?

1. What is climate adaptive in terms of water and how can this ad to quality of life in the city?

2. What is a deprived neighborhood and how does this apply for Rotterdam?

3. What is the current situation in Rotterdam in terms of water, social, economical aspects?

4. What can we learn from other waterfront cities (port cites) and what spatial features and or design principles can we use in the project? - Case studies Kop van Zuid, Pittsburgh and Newcastle??

5. What are the spatial challenges of climate adaptation in waterfront en deprived neighborhood in Tarwewijk, Schiemond and Delfshaven?

6. How can we design spatial interventions in Tarwewijk, Schiemond and Delfshaven related to a interaction between waterfront related environment and deprived neighborhood.

7. How can the solutions of these interventions be related to Rotterdam as a climate adaptive city as a whole.
The use of water management in spatial design will create new opportunities that will enhance the socio-economic processes in both waterfront regeneration and urban renewal as a whole. This will have an effect on the future and quality of life in the city of Rotterdam.

The problem from climate change in terms of water where the necessity is to make our delta climate adaptive.

We have the problem of neighborhoods in Rotterdam that are still declining due to the low income groups.

How can we use water in spatial design in such a way that the Rotterdam delta is climate adaptive and the socio-economical processes in waterfront and deprived neighborhoods are enhanced as a whole for future growth and improvement of quality of life in the city?

We have the problem of recent waterfront development where strategic planning of land use is segregated between high- and low-income groups.

Theoretical study: On Climate adaptivity, deprived neighborhood and quality of life
Analytical study: Location analyzes of districts in Rotterdam that leads to interesting districts to be further analyzed
Empirical study: Case study waterfront Newcastle and Pittsburgh compared to Rotterdam

Results:
List of tools underlying adaptivity that enhance quality of life in deprived neighborhoods.
List of criteria three selected districts must meet in terms of water.
List of design principles applicable for the three selected districts toward a sustainable development.

Development of Adaptable solutions based on the list of tools underlying adaptivity. These apply to the district to create spatial interventions through different scales.
Development of Spatial interventions based on the list of criteria the three districts must meet. These apply to the district through different scales.
Development of spatial interventions based on the formed design principles toward a sustainable development. These apply to the district through different scales.

REFERENCES


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Doucet, B. van Kempen, R. & van Weesp, J (2010), Resident Perceptions of Flagship Waterfront Regeneration: The Case of The Kop van Zuid in Rotterdam. Tijdschrift voor Economische en Sociale


Hanson, S., Nicholls, R., Ranger, N. et al. (2011) A Global ranking of port cities with high exposure to climate extremes. Climate Change, 104: 89-111.


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Reflection

SOCIAL - The Netherlands is ranked in the top 15 of port cities with high exposure to climate change (Hanson et al, 2010) Ports and transport infrastructure are crucial elements for deltas to remain prosperous. Like Rotterdam, one of the largest port, have a position in the delta that makes the city...
and their related infrastructural networks vulnerable to climate change, in particular to flooding, as extreme events over the last few years have demonstrated. Illustration 23 shows the amount of economic damages and victims. That's why it is important to make the built area less vulnerable. In the historic spatial development most strategies have not considered climate adaptive solution which now result in lacking water management for climate change. A lot neighborhoods in Rotterdam are urbanized which do not have the capacity to adapt to climate change. This requires climate adaptive processes in (re)development of these neighborhood. In addition, these climate adaptive solutions can be seen as an opportunity and strength to vitalize declining neighborhood in Rotterdam.

SCIENTIFIC - Climate adaptation is not something new in Rotterdam, but it misses the link in a coherent strategic planning in waterfront and urban renewal. According Groot et al (2015), several efforts were made to co-create a common language amongst researchers. At the start of the project, they were using different terms to discuss similar phenomena in relation to climate change and vulnerability. These processes do not act independent from each other. Understanding this interaction between spatial-technical adaptation and underlying social factors and mechanisms such as economic, social, institutional, political, and cultural dimensions of society are essential to ‘move towards a more sustainable development path’ (Pelling, 2011). Van Veelen (2016) suggest that “Spontaneous actions and planned adaptation policies may, at best, be complementary and mutually reinforcing (illustration 24). However in this case, climate adaptation is a response of a disaster that results in spontaneous adaptation actions that may run the risk of an unequal distribution of risks and costs among society and could create adverse socio-economic impacts within different time.

Thus it is important that we meet with an alternative where planning of urban renewal and waterfront is an integrated process by the use of environmental solutions that at the same time adapt to problems in terms of water and effects the city as a whole in a positive way. This would be part of the assignment for planners and designers within the research group of Delta Urbanism. Climate adaptivity is crucial in Rotterdam to protect its economic status and image as a global port. In addition water related solutions can act as a connector to vitalize declining neighborhoods and waterfront as an integrated process which contribute to the image of Rotterdam as a whole.
Time planning

PROBLEM STATEMENT
- Motivation
- Problem analysis
- Hypothesis
- Formulate research question
- Theoretical study
- Analytical study
- Empirical study
- Field work

RESEARCH
- Design proposal
- Field work
- Development: spatial interventions on design principles
- Development: Adaptable solutions
- Theoretical study
- Analytical study
- Empirical study
- Field work

DESIGN
- Research design principles
- Field work
- Formulate research question
- Theoretical study
- Analytical study
- Empirical study
- Field work

Presentation
- Presentation
- Design proposal
- Field work
- Theoretical study
- Analytical study
- Empirical study
- Field work