Study Plan

Personal information	
Name	**Thomas Moeken**
Student number	**4002709**
Address	**Brede Hilledijk 199a**
Postal code	**3072 ND**
Place of residence	**Rotterdam**
Telephone number	**0613116729**
E-mail address	**t.f.moeken@student.tudelft.nl**
Studio	
Theme	**Hyperbody: NS&IA**
Teachers	**N.Biloria & H.Bier**
Argumentation of choice of the studio	A growing interest in computational design methods and a strong believe in these methods regarding aspects as sustainable and future relevant design.
Title	
Title of the graduation project	**Floating Integration**

Product

Problem Statement

The posed problem, research questions and design assignment. This should be formulated in such a way that the project can answer these research questions.
The definition of the problem has to be significant to a clearly defined area of research and design.

The development of Rotterdam Zuid, with special attention to the "Kop van Zuid and Katendrecht", has resolved in a clear border between the developed Rotterdam Zuid, (south) and the less developed Rotterdam Zuid. These differences lead to social differences and a total different understanding of the two different parts of Rotterdam Zuid instead of one district.
Leading to a research question:
- " How can we reconnect the separated parts of Rotterdam Zuid? Making all inhabitants of Rotterdam Zuid able to benefit from the developments of the Kop van Zuid and Katendrecht."

Rotterdam is a harbor city and has been investing the last decades in the generation of an urban Waterfront. The industries are leaving the city and next to the waterfronts which are losing its formal function also the artificial waters, which had a function to serve the industries, are losing its function. Especially in Rotterdam Zuid these waters are in the picture for future development. Living near the water is a luxury and results in High quality areas. The chosen location is a clear border between the two areas of Rotterdam Zuid. It also has a physical barrier called the Maashaven, an old port area. Since Rotterdam with the Rotterdam Climate Initiative and the RDM Campus, are the leading city in Europe considering floating structures this area has been pointed out by the municipality of Rotterdam as a future location for a floating city.
- "How can this project be a starting point for the future floating city? Taking the social aspects in consideration".

The design assignment is clear in terms of design process, to use the computational strategies and apply generative models in the design process as a result of former workshop weeks. There are restrictions in terms of size and there is a demand for certain program.

Goal

This section has to include answers regarding what the intentions of the graduation project are.

The goal is to bridge the gap between the two area's in Rotterdam Zuid, taking the two main research questions as goals. So make a physical and social connection between the two areas using a bridge typology and program suitable for different classes of the society. The design process will be directed by the computer. The goal is to create the perfect solution for the two research questions taking as much input as possible in consideration. With a result aimed on these two aspects but also on sustainability which will be a big influence in all phases of the design process.

Process

Method description

Description of the methods and techniques of research and design, which are going to be utilised.

The design process will take place in a 3D environment, using several 3d modeling programs to create a realistic situation to measure the different environmental aspects using the therefore designated software.
Research is an important aspect of the computational design strategy. Research will be the input for the used systems but will also be used as parameters for real time interactive adaption. This research starts with an understanding of the environment on all aspects. But while setting rules and making choices within the design process research will be done simultaneously to affect the outcome and the process. For example research on climatic aspects such as, sun, wind & water will be used in different times of the design process for different reasons.
As explained before the decision has already been made to create a bridge-like typology, with extra functions and as a starting point for the future floating city. This will result in a network of bridges or transportation links between the different shores and attraction points which will be determined by research. These transportation links will find it's perfect way by a chosen strategy which uses agent based modeling, branching systems and morphology based on climatic conditions.

Theoretical and practical references

Theoretical (historical, socio-political, scientific and technical research) and practical knowledge that will be consulted

Research of the environment is an important starting point. I will find out which buildings are monuments and which have a future in this area. What buildings are there right now and which are being used for what function? The understanding of the environment together with socio-political knowledge about the different groups and their behavior and climatic aspects will be leading to a set of attraction points.
These attraction points will be the focus of the design process since they will be the knots of the connecting transportation links. To connect the different attraction points I will use the explained system based agent based modeling. This agent based strategy will be the main focus point of my design process .This agent based modeling is based on the beliefs of morphogenesis by Deleuz and its notion of population thinking. Within the media studies paper it will already be discussed.

Scientific and technical research will be done to enhance the used systems and to explore the possibilities in computational design. But also to create a clear vision and position in Architecture regarding the use of computer in the design process. There will be two papers written within the period between P1 and P2 to enhance my abilities in scientific research. This will be for Architectural Research Methods and Media Studies, two courses. The outcome of these papers I'll want to imply in my design process.
Further Scientific research and technical research will involve exploration of different systems and reference projects. There are multiple plug-ins for the program called Grasshopper which is the visualization of an parametric design environment.

Then we have processing which will be the base software for the research of the agents behavior. All behavior and simluations will be created within processing.

We have already joined three workshop weeks based on generative models. We learned to script our own systems and this will be a focus point as well in the design process. These codes will be written in Python and will be implied in the computational environment. Of course we will not try to invent the wheel over and over again. The work of our previous students or used systems by other designers will be used or explored to apply or improve the computational methods.

Sources:
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   Washington University, St. Louis
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L.G.Caldas, A generative design system for low-energy architecture design, Departamento de   Engenharia Civil e Arquitectura
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Tu Delft student repository

Reflection

Relevance and output

The value of the graduation project within the larger socio-cultural and scientific context. List of output with respect to conceptual and design development as well as materialization and construction documents.

As mentioned before the relevance of this project is big. The question: "How can this project be a starting point for the future floating city? Taking the social aspects in consideration".

This means that the project Is based on the relevance of this area and the focus on floating structures, the Rotterdam Climate Initiative and the development of the harbor into urban waterfronts.

The output will be on a local scale reacting to the social differences but it will also be important in the bigger scale of Rotterdam and maybe even in international point of view. It will become the start of a floating community and will be state of the art in technological possibilities and sustainable optimization. Giving Rotterdam a project which will be an icon of the floating structures and the start of urban waterfront development on top of the water.
Materialisation and construction will be part of the second stage in the design process. Were the focus lies on a more urban character, further ahead in the project a chosen location will be developed and structural and materialization will be more important in relation to the realization of the transportation links.

1/9/2014

Time planning Scheme of the division of the workload of the graduation project in the 42-week timeframe (P1-5). Compulsory in this scheme are the examinations at the middle and end of the semester, if required, the minors you intend taking and possible exams that have to be retaken. The submitted graduation contract might be rejected if the planning is unrealistic.

P1: kickoff 02/09/2013
1.1: Introduction, design brief Pavilion
1.2: Workshops & Lecture, Generative systems
1.3: Group work on Pavilion
1.4: Workshops & Lecture, Optimization & Genetics
1.5: Final presentation of the pavilion with groups.
1.6: Startup Graduation project, finishing Booklet pavilion.
1.7: Site analysis & meeting, focus on research
1.8: Site analysis & meeting, focus on research
1.9: Presentation site analysis, and strategy regarding project.
1.10:First ideas for generative systems and computational methods.

P2: kickoff 11/11/2013
2.1: Developing concept, 3D model upgrading, first runs system, Research into area
2.2: Developing concept, enhancing proposed system, Research into area
2.3: Workshops Optimization, Paper review , propose plug-ins
2.4: Paper review Media Studies, Update system with research findings
2.5: Final submission position paper Research Methods,
2.6: Final submission paper Media studies
Holidays
2.7: Draft design (plans, sections, façades)
2.8: Draft design (plans, sections, façades)
2.9: **P2 presentation:** Interactive presentation showing concept, information models, and behavioural diagrams
Next drawings will be obtained from 3D model:
- Urban draft 1:1000 / 1:500
- Program of requirement
- Draft design (plans, cross-cuts, facades) 1:200
- Graduation plan
- 3D-4D parametric models showing schematic design

P3: kickoff 10/02/2014
3.1: Decide to workout area, starting concept façades and materialization
3.2: Concept construction/ materialization
3.3: Façades 1:200, Sections 1:100
3.4: Façades 1:200, Sections 1:100
3.5: Façades 1:100, Sections 1:50
3.6: Façades 1:100, Sections 1:50
3.7: Sections 1:20, Details 1:5
3.8: Sections 1:20, Details 1:5 + prototype
3.9: **P3 Presentation:** *Interactive presentation showing concept, information models, and behavioural diagrams*
Next drawings will be obtained from 3D model:
- plans, facades, cross-cuts, 1:200 / 1:100
- part of the building, plan and cross-cut 1:50
- façade fragment with hor. and vert. cross-cut 1: 20
- details 1:5
- 3D-4D parametric models showing design development
3.10: Review comments, update planning, Bring all aspects together.

P4: kickoff 22/04/2014
4.1: Define focus points, Update comments.
4.2: Update Comments, Start layout.
4.3: Bring all aspects together, finish layout
4.4/4.5: **P4 Presentation:** *Interactive presentation showing concept, information models, and behavioural diagrams*
Next drawings will be obtained from 3D model:

- theoretic and thematic support of research and de-sign + reflection on architectonic and social relevance (see app. 2)
- situational drawing 1:5000 / 1:1000
- plan b.g. in situ 1:500
- plans, facades, cross-cuts 1:200 / 1:100
- part of the building, plan and drawings 1:50
- façade fragment with hor. and vert. cross-cut 1: 20
- details 1:5
- 3D-4D parametric models showing construction design
- Structure and materialisation design for CNC production
- Physical models developed from the 3D parametric model by means of Rapid Prototyping and CNC-production; photographs documenting production, assembly process, and final result

P5: kickoff 26/05/2014
4.6-7: Making final drawings and starting eventual model.
4.8-9: Starting Poster layout and presentation format, improving drawings to presentation style, Finish the model and/or Prototype.
4.10/4.11: **P5 Presentation:** *Interactive presentation showing concept, information models, and behavioural diagrams*
theoretic and the-matic support of research and de-sign + reflection on architectonic and social relevance (see app. 2)
Next drawings will be obtained from 3D model:
- situational drawing 1:5000 / 1:1000
- plan b.g. in situ 1:500
- plans, facades, cross-cuts 1:200 / 1:100
- part of the building, plan and drawings 1:50
- façade fragment with hor. and vert. cross-cut 1: 20
- details 1:5
- Physical models developed from the 3D parametric model by means of Rapid Prototyping and CNC-production; photographs documenting production, assembly process, and final result.
- 3D-4D parametric models showing construction design
- Structure and materialisation design for CNC production

Attention

Part of the graduation (especially in the MSc 4) is the technical implementation of the building design. Therefore a Building Technology teacher will be involved in the tutoring team from the P2 presentation on. This should be taken into account when writing the study plan / personal graduation contract, with respect to the time planning as well as in the relation to the content (e.g. statement, method and /or relevance).