**Graduation Plan: All tracks**

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

<table>
<thead>
<tr>
<th><strong>Personal information</strong></th>
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<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>Student number</td>
</tr>
<tr>
<td>Telephone number</td>
</tr>
<tr>
<td>E-mail address</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Studio</strong></th>
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</thead>
<tbody>
<tr>
<td>Name / Theme</td>
</tr>
<tr>
<td>Teachers</td>
</tr>
<tr>
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</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>Argumentation of choice of the studio</strong></th>
</tr>
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<tbody>
<tr>
<td>I want to explore complex geometries and emergent formations, using computation, to gain skills that can be the beginning of a professional career and critical theoretical thinking that can be applied into the contemporary architectural discourse.</td>
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</table>

<table>
<thead>
<tr>
<th><strong>Graduation project</strong></th>
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<tbody>
<tr>
<td>Title of the graduation project</td>
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<table>
<thead>
<tr>
<th><strong>Goal</strong></th>
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<tr>
<td>Location:</td>
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<tr>
<th>The posed problem,</th>
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<tr>
<td>In the current situation of the area, a great gap between the existing site and the situation of its context is obvious. The Merwe-Vierhaven is an important spot since it is located between Schiedam and Rotterdam and many industrial activities used to happen in the surrounding region. The chosen site is Europoint three-tower complex on Marconiplein, the north-eastern part of the area. The towers functions are mainly office and were designed by SKIDMORE, OWINGS &amp; MERRILL architects during the 1971 and 1975. Yet, there are many issues concerning these towers such as lack of inside-out or outside-in connections, high energy consumptions for providing required indoor climates through mechanical air conditioning and being mono-functional. Hence, we witness today, almost one third of these towers are abandoned, as the functions</td>
</tr>
</tbody>
</table>
in the area are not linked to its surrounding. Furthermore, these towers were built during the 70's when the Merwe-Vierhaven area was expected to become one of the most important business hubs in Rotterdam. Nonetheless, such area full of potentials is dead as if it is not part of the city today. Insufficient urbanity provided and almost no inhabitants in the area is one of the main reasons for that. Most of the buildings in the area are used as industrial storage. Others are mainly used merely during the day, such as office towers that turn the area into the Gotham city during the night.

However, the municipality of Rotterdam considered development strategies for revitalizing the area through increasing creative activities, leisure and dwellings in the. Yet, there should be strategies taken in order to provide stronger link between the area and the surrounding urban context.

### Research Questions and

Regarding the stated problems, the research question is that how the area can be revitalized and linked to its urban context through redesigning the Europoint towers?

### Design Assignment in which these result.

Once a building is built, it starts to become obsolete as the essence of the design is based on unstable and unpredictable environmental and social values. There should be explicit connection between these dynamic factors and the outcome of the design process. In other words the architecture should contain metastable characteristics which makes it parallel with its essential ever-changing variables, as there is no solid solution for a dynamic context. Yet, in order to avoid issues that were mentioned in the problem statement section, The use of computational design and robotic fabrication techniques play an essential role. An informed design able to connect 3D modeling to verifiable data, where functional reading and processing of real time data from sensors, Internet, and other data-base make literally ends meet. Special attention will be given to seamless
design to robotically driven production and use chains. The aim is to provide platforms for a never-ending design process of the Europoint towers, which changes, remodels and reconstruct the existing building situations with respect to the new environmental and social needs each time that they vary. Other words, providing principles that adapt the spatial and material porosity of the towers due to the changes in time.

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

**Process**

**Method description**

Through defining a parametric framework, different effective parameters and their relations with building porosity ranges in all scales of macro (space), mezzo (envelope) and micro (material formations) are addressed. Following that, the design starts from the vacant spots of the towers with reprogramming while other parts of the building is preserved. Through using Object Oriented Programming and Object Oriented Design methodologies, the attempt is to perform Bottom-up strategies and simulations for program finding and positioning in the site. The idea is to apply Boolean principals for emergence of open and closed spaces of the new selected program. Based on the Boolean logic, the new informed design evolves and grows comprehensively from inside the towers and reconfigure the existing conditions based on the fitness criteria with respect to the design aims. The proper porosity ranges in different mentioned scales to be configured in an optimized situation through searching methods.

**Literature and general practical preference**


Chu, Karl, Metaphysics of Genetic Architecture and Computation

Leach, writings about Manuel De Landa's theory of "New Materialism".


Reflection

Relevance

Through an informed design and robotic fabrication, an open-ended design for the towers, which constantly remodel and adapt itself according to the needs, is possible. As a result, the potentials of climate control, CO2 reduction, renewable energy production and optimum spatial configurations are achievable. The porosity of the buildings adapt to any outer change to make the them explicitly connected to their environment and eliminate the voids among the existing situation and the dynamic social and environmental factors.

Time planning

Weeks 1-8:

Collaborative research upon the site;
Explore computational techniques and choose a computational system to use for the project;
Thematic and situational research that includes:
- in depth analysis of the site in order to extract data that inform the computational simulations;
- parametric framework for the informed design;
- theoretical research about contemporary architecture and its implication for the built environment;

Week 9: P1 Presentation

Weeks 10-18:

Understand and develop the chosen computational strategy;
Start simulations on site in order to produce informed geometries;
First design proposal;
Study models and exploration of 3D printing as a technique of producing physical complex geometries;
Program of Project;
Draft design and draft 3d Model;
Graduation plan;

Week 19: P2 Presentation
Weeks 20-27:
Decide on technical implementations of the design proposal;  
Study models and first scaled prototypes;  
Further development of the design;  
Plans, facades, cross-cuts, 1:200 /1:100  
Part of the building plan and cross-cut 1:50  
Façade fragment with horizontal and vertical cross-cut 1: 20  
Building details 1:5  

Week 28: P3 Presentation  

Weeks 29-34:  
Bring the project close to finalization;  
Prepare all the necessary information for a finalized project: plans, sections, 3d model, technical details;  
Theoretic and thematic support of research and design + reflection on architectonic and social relevance;  

Situational drawing 1:1000 and plan b.g. in situ1:500;  
Plans, facades, cross-cuts, 1:200 /1:100;  
Decide on a part of the building to detail, plan and cross-cut 1:50;  
Choose a relevant façade fragment to detail, with horizontal and vertical cross-cut 1: 20;  
Details 1:5;  
Reflection details.  

Week 35: P4 Presentation  

Weeks 36-41:  
Work on the final presentation of the project, final physical model, renders and details  
Theoretic and thematic support of research and design + reflection on architectonic and social relevance;  
Produce all the final version of :  
Situational drawing 1:1000 and plan b.g. in situ1:500;  
Plans, facades, cross-cuts, 1:200 /1:100;  
Decide on a part of the building to detail, plan and cross-cut 1:50;  
Choose a relevant façade fragment to detail, with horizontal and vertical cross-cut 1: 20;  
Details 1:5;  
Reflection details.  

Week 42: P5 Final Presentation