Graduation Plan: All tracks

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

Personal information

<table>
<thead>
<tr>
<th>Name</th>
<th>Perry Lee Jeng Jin</th>
</tr>
</thead>
<tbody>
<tr>
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</tr>
</tbody>
</table>

Studio

<table>
<thead>
<tr>
<th>Name / Theme</th>
<th>Hyperbody</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>Dr. Henrille Bev, Dr. Nenish Blinta, Dr. Karel Volkes</td>
</tr>
<tr>
<td>Argumentation of choice of the studio</td>
<td>Use of CAD/CAM create connections within an empty tower to extend the ground plain into a vertical typology</td>
</tr>
</tbody>
</table>

Graduation project

<table>
<thead>
<tr>
<th>Title of the graduation project</th>
<th>The Vertical Neighbourhood</th>
</tr>
</thead>
<tbody>
<tr>
<td>Goal</td>
<td>Redefining the Tower</td>
</tr>
<tr>
<td>Location:</td>
<td>Marconi Torens, Marconiplein, Stadshavens, Rotterdam, Netherlands</td>
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</tbody>
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The posed problem,

Problem 1: The Netherlands has the most vacant office space in Europe with 7.5 million square meters. Driven by developers, decentralized planning and downsizing of companies, new buildings continue to be constructed in spite of abundant availability.

Problem 2: Towers represent a disconnected typology where site of being in close proximity, spaces are largely segregated from each other connected by the elevator resulting in an environment that is not feasible for interaction between inhabitants.

Research questions and design assignment in which these result.

Given that the issue results from a top down approach (urban & corporate planning) the system is intended to follow a set of rules as outlined by the architect and used by local inhabitants to produce a varying and ever changing urban fabric that is in constant functional use.

To consider embodied materials inside existing buildings as a resource available for new architectural projects and setting in place rules that can limit the growth of an urban landscape in a way that is sustainable both from a material perspective as well as for the social health and integrity of a local neighborhood.

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

Research: Site analysis of the Stadshaven and its surrounding landscapes. A look at current practices and policies that effect how and why the area is slowly falling into disuse.

Workshop conducted by Hyperbody exploring computer aided manufacturing and how robotics can be a practical method of construction.

Design Strategy: Create a parametric framework to organize all necessary functions in the unoccupied site area; create separate framework to quantify all available material in the immediate site; cross reference both sets of data to see what can be built from the available resources; with the results, use the parametric framework to create positive and negative spaces according to practical needs such as light and spatial requirements; these spaces are pre-determined by the architect, and the system simply optimizes their locations according to separation and structural rules.

Literature and general practical preference

Docherhus and Bier, Robotics in Architecture
McCullough, Digital Ground: Architecture, Pervasive Computing, and Environmental Knowing
Negroponte, Soft Architecture Machines
Latour, Reassembling the Social: An Introduction to Actor-Network-Theory
Lucy Bullivant, 4spase: Interactive Architecture
William Mitchell: e-topia
Richard Sennett: The Craftsman
Stephen Kieran and James Timberlake: refabricating architecture
Gramazio & Kohler: Flight Architecture
Gramazio & Kohler: Digital Materiality in Architecture
http://www.robotsinarchitecture.org/

Practical: Msc1 and Msc2 Hyperbody experience with parametric design methods

Reflection

Relevance

Given that the problem of office vacancy is not unique to the Netherlands. (Many major cities in the world like London, Dubai, New York, etc. face similar problems) This area of research and the resulting system may be implemented on a global scale.

Time planning

Week 36-38
Research into (proposed) masterplanning of the site
Week 39-40
Studying other teams’ research results
Week 41-43
Workshop on robotic fabrication
Week 44
P1 preparation and P1 Presentation
Week 45-51
Researching and establishing a parametric framework fit to attack the design problem – start the parametric framework that calculates and moves different typologies within the designated void spaces. Establish sizes of spaces such as residential, retail, manufacturing sizes as needed for the intended program mix. Further research into construction and de-construction techniques that can be practical in tight spaces; Preliminary simulation to see what the form will look like.

Week 52-1 Holiday
Week 2-4
Continued progress on parametric model and finalisation of data; run simulation to form final architectural expression of positive and negative spaces; graduation plan based on template, urban draft / master plan 1:1000 / 1:500, programme /list of requirement, Draft design (plans, sections, elevation); preparation of P2
P2 Examination
Week 5-9
Further development of design proposal and architectural intentions with the space and function layout. Run several simulations in order to produce various outcomes based on a time line, or with different variables

Week 10-15
Integrating material allocation according to availability of site material as outlined in design intention; look at porosity as a means of light integration; 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; preparation for P3
Week 16
P3 Presentation
Week 17-19
Developing a computational system to apply this skin system to the architectural body; theoretic and thematic support of research and design + reflection on architectonic and social relevance; site 1:5000 / 1:1000, plan ground level 1:500, plans elevations, sections 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, reflection based on template; Preparation for M4
Week 20-21
M4 Examination
Integrating architectural body, interior designs, and construction/skin system and finalize design. Work on final visualizations and poster layout.

Week 22-25
Preparation of final drawings details, scale models
Week 26-27
P5 Presentation