

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	
Name	Thomas Bollen
Student number	5611490

Studio		
Name / Theme	Metropolitan Ecologies of Place	
Main mentor	Ulf Hackauf	Environmental Technology and Design
Second mentor	Machiel van Dorst	Environmental Behaviour and Design
Argumentation of choice of the studio	<p>Personally, I want to learn about and contribute to creating sustainable cities. I think it is of vital importance that, rather than following guidelines, we have a deeper understanding of the elements and relations between processes in the city. These could be natural processes, but also human processes, like the economic systems or cultural aspects. This is the urban Metabolism. Especially their interaction is something we can utilize to come up with smart and effective solutions to achieve a sustainable city.</p> <p>The studio Metropolitan Ecologies of Place is focused on analyzing the urban metabolism. By getting an understanding of the processes and their interactions, we can pinpoint leverage points that can, with a subtle intervention, evoke changes towards the better.</p> <p>This is a mindset that is much in line with my understanding of sustainable development.</p>	

Graduation project	
Title of the graduation project	<p>Retrofit Rotterdam</p> <p>Sparking incentive for retrofitting intensive-use rooftops in Rotterdam.</p>
Goal	
Location:	Rotterdam, The Netherlands
The posed problem,	Rotterdam is growing. As the city plans to grow inwards, by densifying the city, the pressure on

	<p>open space is becoming bigger. Meanwhile, a large portion of the space on top of buildings, their rooftops, is not used. Although intensive rooftop use (more than shelter) is happening more often, this is usually only the case for new buildings and developments. All while in the future, most of the rooftop surface of Rotterdam will consist of existing, older buildings.</p> <p>On top of relieving spatial pressure rooftops can have a lot of other benefits, like contributing to climate adaptivity or increasing liveability. Moreover, the distribution of rooftops offers a unique property that big parks do not have: diffusion.</p> <p>This all calls for the development of retrofitted intensive-use rooftops. But it is not happening too often. In this process there are a lot of obstacles to overcome, and the incentive is generally low. In addition, conflicts between stakeholders can stop this process or cause one-sided decision. This poses a challenge: sparking incentive and making it easier to overcome some of the obstacles.</p>
<p>research questions and</p>	<p>Which strategies can be used to strengthen incentive to initiate the development of retrofitting intensive-use rooftops?</p> <p>Sub-questions:</p> <ol style="list-style-type: none"> 1. Which parameters are required to reduce the threshold of investigating rooftop usage and development? 2. What stakeholders are involved in the process and what are their values? 3. How can a clearer overview of available options contribute to making well-considered decisions? 4. Which properties can help to strengthen existing incentive in bottom-up development? 5. How can collective values that are not represented by stakeholders be

	involved in the decision-making process?
design assignment in which these result.	The assignment would be to develop a strategy that sparks incentive to retrofit an intensive-use rooftop and deals with the challenges, as shown in the sub-questions.

[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

[A DESCRIPTION OF THE METHODS AND TECHNIQUES OF RESEARCH AND DESIGN, WHICH ARE GOING TO BE UTILIZED.]

The problem statement and definition of concepts has been done mainly through literary inquiry. This has helped to lay the foundation of the project and formulate the strategy. In addition to that, spatial analyses using GIS data has helped to expand the knowledge on the site, and some interviews were conducted to dive into the more case-specific details.

As for the strategy, the initial setup was based on the literary inquiry and a formulated hypothesis. The strategy will be further developed using a series of iterations that test and improve the frameworks used. By hosting workshops, the sub-questions can be addressed, and the strategy can be adapted accordingly. Moreover, the information from the literary inquiry will be supplemented by interviews with experts in the field. This helps to give a more practical view on the project. which works well with the complementary theoretical approach the literature provides.

Literature and general practical preference

[THE LITERATURE (THEORIES OR RESEARCH DATA) AND GENERAL PRACTICAL EXPERIENCE/PRECEDENT YOU INTEND TO CONSULT.]

Besides using articles and other literature, I am using **GIS Data** for spatial analyses. I also use GIS data in the assessment of the stakeholder values.

I'm consulting various experts through **interviews** in the process, like parties within the municipality, experts on stakeholder engagement and experts in the practical application of rooftops.

Finally, some practical experiments in the form of **workshops** will be held to improve and iterate upon the strategy. These will be targeted at answering my research questions specifically.

Reflection

1. What is the relation between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS)?

In the studio Metropolitan Ecologies of Place, an important element is the metabolism of the city, which involves the interaction between systems (both natural and human) in the urban environment. In my project, I am working with the metabolism of the city as an integral part of the development of buildings, specifically their rooftops. I deal with different kinds of stakeholders that all encompass a specific 'stream' in the urban metabolism. Users concerned with the liveability of the everyday, Society concerned with climate change and other collective values and Enterprise concerned with the economic flow and revenue of a city. These all intersect when it comes to rooftop development.

Similar to how one could analyse the effects of salination on agriculture and economics respectively, I analyse the complex interactions between these 'streams' in the urban metabolism.

Given the complex nature of these intersections in the urban domain and their multidisciplinary properties, I think Urbanism is one of the only disciplines with that has an overarching knowledge- and skill set, which is needed to understand the relations between these streams. An economist could analyse the financial aspect of a rooftop, an ecologist the effects on biodiversity and an policy-maker the implications for municipal law, but neither of them understand their interaction fully.

Yet, as an urbanist, it is our job to understand these interactions rather than focussing the disciplines themselves. Therefore, I think this specific project fits very well in the master track and the graduation studio.

2. What is the relevance of your graduation work in the larger social, professional and scientific framework.

The project is aimed at creating bridges and overlaps between elements that otherwise would seem contrasting. Firstly, the project focusses on stimulating bottom-up development, while keeping the general impact of rooftops into consideration. It works through the scales in both practical and theoretical facets. It offers a new type of approach to a topical subject. Moreover, it describes a method to deal with common obstacles, such as stakeholder engagement and links them to promoting developments.

In a social context, the project provides a strategy that can help with stakeholder empowerment. The project addresses issues in a domain that can often be dominated by financially driven decisions. This is especially true in more vulnerable neighbourhoods and buildings, such as social housing projects. By offering a systematic method that promotes stakeholder engagement, the project (ideally) contributes to creating a platform where dominant stakeholders are more easily tempted to compromise with less dominant stakeholders.

