

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	Martin de Beun	
Student number	4835360	

Studio		
Name / Theme	Architectural Engineering	
Main mentor	Anne Snijders	Architecture
Second mentor	Pieter Stoutjesdijk	Research
Argumentation of choice of the studio	Technical approach, relevance to actual construction practice, freedom of choice, feasibility of genuine architectural solutions, societal value, possibilities for novel and innovative solutions	

Graduation project	
Title of the graduation project	Cooperative Transformation for Sustainable Densification: the gallery flat as a catalyst for enabling a circular economy and sustainable lifestyle in the postwar neighborhood.
Goal	
Location:	Boerhaavewijk, Haarlem
The posed problem,	Dutch postwar neighborhoods, such as Boerhaavewijk, suffer from a number of inherent issues which makes them unfit for a circular future, of which many relate to low density and a mismatch between housing and households. One such example is the gallery flat, often seen as outdated and neglected.
research questions and	How can the principles of efficient usage of space in cooperative housing projects be applied to vertical extension on gallery flats in order to increase density and diversity of housing in postwar neighborhoods, thereby making it fit for a circular economy in 2050?
design assignment in which these result.	Using the 2000-watt-society as a guideline; to develop an integral strategy for cooperative renovation and densification of a gallery flat which can

	procedurally develop itself to make it, and the postwar neighborhood by extension, compatible with a circular lifestyle.
Process	
Method description	
<p>The research is a combination between two approaches. First, a traditional literature study to establish a theoretical framework to provide conditions for what sustainable living means and how architectural/urban design can enable it. Second, a case study analysis in which qualitative and quantitative standards for contemporary dwellings are compared between traditional and unconventional, but spatially efficient, cooperative housing. In doing so, and contextualized by the previous section, explicit architectural design strategies for enabling a more sustainable and circular lifestyle through housing become apparent. Those findings are then again positioned and evaluated in the context of the Dutch postwar neighborhood through both literature study and a case study, leading to explicit design strategies.</p> <p>In the design phase, the aforementioned strategies can be used to start designing appropriate interventions towards the final result. So far, the design context has been informed by traditional literature study, but also historical research, data analysis, historical research, site visits and formal discussions with local inhabitants. Further contextualization and survey will be part of increasingly specific site analysis, as will be fitting for each appropriate phase in the design process. Additionally, one specific subject which was scrapped from the research phase is expected to return in the design phase, which is research into sustainable, adaptable and prefabricated construction methods for realizing the design goal. However, this is expected to be executed solely as a means towards design and not a scientific examination, since the research phase now has to transition explicitly towards design.</p> <p>Design will be conducted through experimentation (2d/3d modelling, sketching, drawing), case study precedents (references), literature studies (books).</p>	

Literature and general practical preference

For a full list of literature used in the research, see the research paper. For research during the design phase, a number of sources on digital/timber/prefabricated manufacturing will be used such as the *Manual of Multi-Storey Timber Construction* by Detail Magazine, and for more general precedent books such as *Constructing Architecture: Materials, Processes, Structure* by Andrea Deplazes.

The transition of the gallery flat to a cooperative model is based on the model described in *Operatie Wooncoöperatie* by Arie Lengkeek and Peter Kuenzli. It will be used to develop the cooperative framework on which the project is founded. More literature will be used during the process.

Reflection

The graduation project is most clearly related to the Second Life theme in the aE studio, though this relationship is not explicitly fostered anymore, as our studio now sees a vast breadth of different topics per student. To some extent, it relates to the One Million Homes and Open Building theme as well, though the relationship is based more on the fact that they are both addressed and used in this project, but not explicitly taken as a starting point nor final goal. In the wider context of the master, it aims to combine the urgent and relevant question of circularity in architecture to need for proper housing, the re-use and renovation of neglected building heritage, urban renewal *and* links those to the socio-economic side of the built environment; the people who inhabit the post-war neighbourhood. In combination with the cooperative model, which is a more managerial aspect of this approach, a great diversity in subjects is covered. Thus, the project is not just mainly an architectural exercise, but includes aspects from the urbanism, management and building technology as well. Additionally, this project is a continuation of my fascination for social sustainability, which I researched during my BSc. This project will represent the position that I have developed in my 5 years in architectural education.

The approach I have chosen is quite vast and challenging, yet because of doing so I believe an opportunity exists to deliver a project which is rooted in strong arguments and at least some genuine feasibility. In the social framework it provides a case example of how the existing building stock should be treated in relation to the question of circularity by 2050. Beside that, it demonstrates an approach to revitalise typical Dutch post-war neighbourhoods for this future and more importantly, how the people that inhabit it can also become part of this future. By taking into account the position of its inhabitants, costs and feasibility the project the project aims to be a genuine solution for the future. Though not entirely finished by P2, the goal of the project is to both show in one specific case how the cooperative renovation strategy *could* be executed and simultaneously, by research, demonstrate that its approach is feasible for many more gallery flats and thus many more post-war neighbourhoods. Though the systems and legislature for the cooperative model are not yet fully implemented in the Netherlands, it is approaching a turning point. Furthermore, the successes seen in cities like München, Vienna and Zürich prove that the cooperative model is certainly feasible and even necessary.

