

REFLECTION PAPER

Project Title

Design for Change

An adaptable housing complex which deals with
the impermanence of Architecture

Personal Information

Name: **Leonardo Enzo Pozzi**

Student number: **4744462**

Studio

Name of studio: **Architectural Engineering**

Context: **1 Million Homes (Marineterrein)**

Mentors: **Mauro Parravicini, Engbert van der Zaag
Pieter Stoutjesdijk**

Delegate examiner: **Maarten Meijs**

The relationship between research and design

Joining the Architectural Engineering studio, and the TU Delft in the first place, was not a difficult choice for me. During my bachelor I discovered my interest for the technical and technological part of architecture. I was especially fascinated on how it was possible to translate abstract conceptual drawings into the most real details, communicating, throughout all the different drawings, the same guiding idea.

Knowledge plays key role when it comes to translate abstract ideas into physical matter. For this reason, research aims not only at understanding what has been already done, what has worked and what has not, but it also widens your point of view on a specific subject. One of the things I have learnt from this master is that often is not necessary to reinvent the wheel but maybe that wheel can be improved or used in different applications in order to create innovative solutions.

During these two years at TU Delft I developed my interests in engineered timber structures and circular buildings and I really believe these will be two of the major actors in the architecture of the 21st century. Therefore, since the beginning of my graduation, I decided to focus my project and also my research on these two topics. The aim was to create a building which was able to address the current needs of the society being able to adapt to different future scenarios.

In order to achieve that, I decided to research into the field of design for disassembly in architecture, especially in relation to timber construction. By doing so I was able to understand the principles and the guidelines that I had to follow to design a flexible building which could adapt not only in relation to its functions but also in its shape and structure. I studied a large variety of connection systems and assessed them with criteria related to the graduation assignment and goal. In that way, I also learnt a lot about assessment methods and their reliability. This has revealed very helpful further on when it came to actually make decisions during the design project.

Parallel to this main topic, I also had to researched other aspects of my project, which were focusing more on the social related matters of the design. The building needed to address the current needs of the society and especially the needs of Amsterdam, the city where the project is located. It was immediately clear how the urge of housing was probably the biggest need of the city and the entire state as well. But if new housing had to be built, who would have been the new resident and what will their needs and wishes be. Every question I asked myself while designing was actually the starting point of a research and the outcome of the research established the framework of the design itself. An iterative process where research and design follow and combine each other.

The relationship between the graduation topic, the studio topic and the master track

The graduation topic focuses mainly on the aspect of circularity in the built environment. This is intended not only in relation to the resources used for the materialization of the building itself but also to the ability of the design to adapt to future needs and requirements.

Even though this topic had already been developed by other graduate students, the approach and the design assignment can be considered quite different than what have been done before. The project focuses on creating a new modular and demountable building system to design buildings able to adapt to different future scenarios. On one hand, the Architectural Engineering chair focuses on addressing the technical and social issues of the society in an integrated way where the how is equally important as the why and the what. For this reason, one of the guiding themes of the studio is circularity of the built environment. This aim to avoid wastefulness of resources by reusing elements and components multiple times. On the other hand, the entire architecture faculty is now focusing on the urge of housing the Netherlands is currently facing. My project addresses both these topics developing a circular solution for housing which is also able to adapt to future requirements. It is the link between these social and the technical issues that defines the graduation topic itself.

Elaboration on the research method and approach chosen in relation to the graduation studio methodical line of inquiry

The studio of Architectural Engineering is clearly split into two elements: research and design. These are constantly developed in parallel but in the first semester more focus is expected to be given to the research which gradually leaves more and more space to the design in the last semester. At the end of the first semester, the result of this approach are clear research conclusions on the specific thematic research but also a very preliminary design. Furthermore, the research in the first semester was very much specific on the selected topic. On one hand, this allowed every student to gain a lot of knowledge on a particular subject but, on the other hand, it also forced to partially leave all the other topic-related aspects behind.

For this reason, after the P2 I felt like I was missing some important parts of the project because the goals were not completely clear yet and the general idea behind it was still a bit vague. At the beginning of the second semester, I had time to focus more on these aspects which had become much clearer. Nevertheless, I still researched a lot into all the different aspects I gradually encountered. Therefore, I believe the research cannot be reduced to the singular thematic topic chosen at the beginning of the graduation, but it should be supported and documented throughout the entire graduation project because even though every student focuses on a particular subject I believe as architect we are always in charge to control the general picture and all the related topics and side-topics within a specific design assignment.

The relationship between the graduation project and the wider social, professional and scientific framework

This graduation project concerns many themes of the current architectural discourse and, for this reason, it can be considered relevant regarding different aspects.

First of all, it addresses the theme of circularity, already present in the future and current plans of the municipality of Amsterdam. The circular economy aims at minimising waste fostering reuse and recycling of materials. In the building industry, circular structures are currently

under investigation and it is already possible to see some built applications of this principle especially in the northern Europe. The project investigates this theme developing a solution for a fully circular and demountable residential complex which will represent a further step towards the goal of a fully circular economy.

Secondly, wood is experiencing a revival in the field of architecture. In terms of sustainability and low carbon emissions wood is considered the most reliable option within structural materials. With its engineered applications and extensive fire safety tests, it was already possible to say that timber can be considered a viable alternative to concrete and steel. The graduation project investigates the application of engineered timber in modular and demountable structures which have a high degree of flexibility and can, therefore, address the constantly changing needs of people, communities and cities, being able to constantly adapt to new and different scenarios.

Lastly, the project has a strong relevance regarding the new way of living of the 21st century. Every year the number of people living alone increases, especially in cities where the housing stock was mostly designed for the society of the 20th century, composed mainly of families with two or more children. Nowadays, these houses and flats are shared by individuals who are adapting their lifestyle to spaces which are not designed for their specific needs and requirements. Therefore, a new type of accommodation is needed for this growing group of people. The project aims to address this current issue by creating a residential complex where people can live individually, sharing common facilities with other neighbours and interacting in a complex and multifaceted community.

To conclude, the project shows how it is possible, with current technologies, to achieve a fully demountable building system which is also able to adapt to the changing needs of the people and the society. What I discovered throughout the design process is that in order to achieve flexible spaces you also introduce limitations to the freedom of the design. When designing with modular elements you have to follow certain rules and even if you can assume there are limited exceptions it is always better if also that are standardised and become a part of the entire system itself. I believe the built environment should definitely aim at reducing its impact on the planet, but such an extreme solution, as the one proposed in this project, probably works best only when its potentials are fully exploited, for example if the construction time is limited, if the building is temporary or if there is a strong argument to really minimize the environmental impact.