

Reflection

Graduation Studio Architectural Engineering
2020-2021

Oscar R.J. Snethlage

Reflection Paper P5

Personal Information

Name Oscar R.J. Snethlage
Student number 5063922
Date 13-01-22

Studio

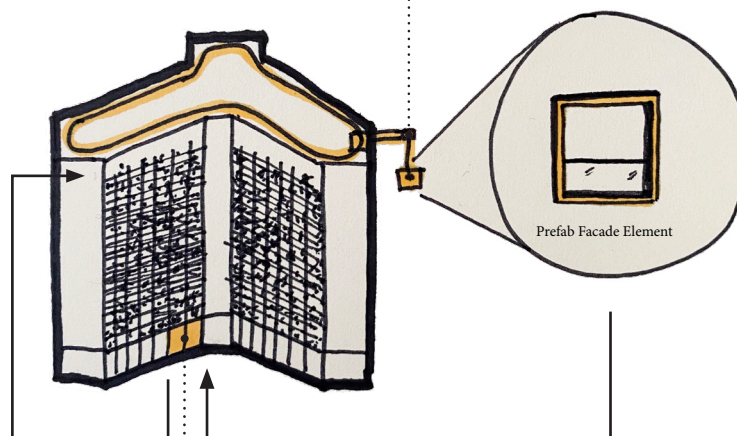
Name of studio Architectural Engineering
Name project Kaizen Tower

Aspect 1 - The relationship between research and design.

The research conducted for the graduation examined how an existing office building can be transformed into a residential building on the basis of demountability. The building; De Knip (a building not initially designed to be demountable) in Amsterdam Sloterdijk was used as a study case to measure it's demountable capacity and investigate how this has an influence on the function change. The starting point of the research was at first intended to focus on the big waste production of the building industry. This guided me in the end towards the focus on the reduction of waste production by reusing building components. This was finally converged to the focus on demountability. The research helped me allot to provide guidelines,

Demountable & Remountable facade elements from crane (strengthened window cleaning installation)

Facade Leasing -> Custom design from toolbox



Facade Elements Repair/Maintenance by the Kaizen Foundation, in the building itself (local)

mostly on the detail scale of the design and also in quantifying the demountability. The reuse of building components later on in the design phase turned out to be the main concept of the project, and was consequently named; Kaizen Tower. Kaizen meaning; improvement through change, a production philosophy originated from Japan in 1950's.

Aspect 2 - *The relationship between your graduation (project) topic, the studio topic (if applicable), your master track (A,U,BT,LA,MBE), and your master programme (MSc AUBS).*

A big part of my fascination, and the reason that I chose the Architectural Engineering studio was to find technical solutions and innovations for a social problem in society. First, I focused on the Make domain within the studio. This turned out later into a mixture between Make and Stock, because of the decision to do a transformation project. The research enabled investigating the quantification of an existing project and looking for the potential in the functional change of an existing building (stock). This was followed up by the development of existing building systems to increase their demountable capacity and therefore reuse of building components (make).

Aspect 3 - *Elaboration on research method and approach chosen by the student in relation to the graduation studio methodical line of inquiry, reflecting thereby upon the scientific relevance of the work.*

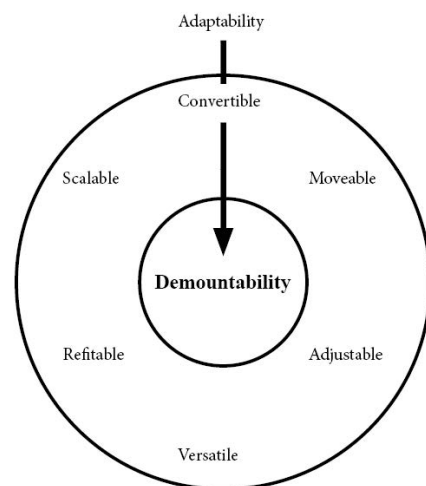
The necessity to give an explanation to the key terms in the research gave me focus in the graduation project. Using terms like 'sustainability' can be wildly interpreted and therefore vague. To give an answer to the question how demountable a building is, required a quantitative approach. It was interesting to compare different existing demountability measuring tools and see the difference in parameters that were used in the examples. Also the 'level of demountability' that can be measured was interesting but also difficult to determine.

The outcome of my first attempt to assign a demountability score for the whole building

turned out to be not useful to work with. Therefore a change had to be made to rate the demountability on the component level of a building.

This measuring approach was useful for me to experiment on an existing design and find out where the problems are with regard to their demountable capacity. To use the demountable ratings early on the design process, rather than afterwards is in my opinion highly recommended to increase the reuse of building components.

Aspect 4 - *Elaboration on the relationship between the graduation project and the wider social, professional and scientific framework, touching upon the transferability of the project results.*



Adaptability through demountability.

The study case of the building De Knip was an example on how to quantify its demountability and therefore specific for this building. However the methodology used can be applied for any building on a component level and consequently can be also of a generic nature. Incorporating the demountable aspect of a design influences the long term maintenance and use of a building.

Aspect 5 - Discuss the ethical issues and dilemmas you may have encountered in (i) doing the research, (ii, if applicable) elaborating the design and (iii) potential applications of the results in practice.

The main reason for a contractor or developer to include the demountability aspect has to do with long term commitment, over short term satisfaction in gaining profit. The moral consideration between cheap & static solutions, often outweigh the more adaptable solution. Designers can have an important role on how a design is still useful for its next iteration.

The definition for adaptability that I used during the research and project was the following:

"The capacity of a building to accommodate effectively the evolving (spatial) demands of its context, thus maximising its value through life."

The research and project have made clear to me that adaptability is not just a physical or technical endeavour, but also finds implications in many other areas of the architectural design discipline throughout all different scales.

Among other elements, the aspect of time plays an important role in the concept of adaptability in my project. Having a building that is de- and remountable has a positive effect with regard to material reuse, but still says very little about the user benefits in this moment (the current). I tried my best to represent the interest of the user in the design, by presenting options for residents to configure their own facade from a toolbox of options to fit to their demand in comfort and usability. For me the difficulty was in setting the boundaries of the given freedom for users to create their own facade from a set of options (toolbox). Subsequently, the freedom for a resident should not restrict the freedom of someone else.

The structure of De Knip was made out of concrete and showed its limitations to the level of adaptability that could be reached. For example the concrete floor limited the ability to combine dwelling vertically over time and would have been too much of an impact on the building structure. This however turned into a design solution

ADAPTABLE RIGHT NOW

A house that fits the residents right now, it will make them happy, they are attached to it and to their surroundings

ADAPTABLE NEAR FUTURE

Easily adapted to the near future. (flexible building)

ADAPTABLE UNKNOWN FUTURE

Important. We just don't know how people will live in the future. (future proof)

to present users with the ability to combine dwellings vertically on the outside of the building through the flexible facade. This could be desired for example when a family decided to live together again with their parents when they reach an older age. Also for the prefab concrete facade elements showed difficulty to be removed completely, due to their highly integrated position in the structure of the building (concrete casted to floors). The decision was made not remove them completely but specifically cut out parts of the elements and reuse them as floors, closely to their original location, to reuse the parts as easily as possible.

The decision to renovate the building in this particular way, namely, to reuse or reconfigure elements of the building could have also been a different strategy, thinking of position of the building itself. For example to reuse building components 1:1, with zero adaptations. In this project I decided to reuse as much of the initial materials of the building as possible, but reconfigure them to goal of being adaptable to the evolving demands of the context.