

Graduation Plan

Master of Science Architecture, Urbanism and Building Sciences

Jemma Scheijde

Jemma Neave Scheijde
5690242

Delft University of Technology
MSc Architecture

AR3AD100
Dwelling
Advanced Housing Design

First mentor: Olv Klijn
Second mentor: Ruurd Kuijlenburg
Third mentor: Alejandro Campos Uribe

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Studio

I chose the Advanced Housing studio as my final educational project to develop skills that have not been tested in my bachelor's degree, as well as the design of a project in a context that is unfamiliar.

For the MSc1 project, I did the Fundamentals of Housing studio. Since we were not given any housing project studios in my bachelor's, I wanted to learn the basics of how to design large-scale housing projects. I found this studio to be challenging, and I learnt a lot about building codes and design of varying detail levels. I also struggle with the detailing of buildings, and this was a prominent part of this studio, and specifically the topic I chose (resources).

I also chose this studio for the site we would be working on. I find it interesting to design a project based on a site proposal for 2100. This means I have to think of what the future would look like in

a Dutch context I am not familiar with, which involves a lot of research.

With the skills achieved in this studio, I'm hoping to end off my education confident in all the skills I was doubtful of previously.

Graduation Project

My graduation project, titled Resourceful Affordability, aims to design affordable housing based on different methods of approaching resource usage. This is due to the fact that in the Netherlands, there are many people who fall into the gap of not being able to rent social housing due to too high an income, but they have too low an income to be able to easily rent in the private sector. This is due to the shortage of affordable housing in the private sector, as well as fewer regulations that govern the prices and increases in the private sector. To increase the affordable housing stock, housing would have to be developed cheaply, however in combination with affordability, resources are seldom looked at as a solution. With this, I plan to gain insight into the combination of resources with affordability to provide a solution to this issue in my design. With this, this research aims to answer the question: "Which resource implementation principle is the most suc-

cessful in the creation of housing that is considered to be affordable in the free market rental sector?"

The design of this project is located in Midden-Delfland (51°56'34''N 4°19'49''E). The design will focus on the resource principle that is proven to be most affordable in the research paper, but will also incorporate the other principles for maximum affordability and sustainability. Affordability will also be achieved using more methods than solely resources, such as co-housing. The design, based on studio requirements, will also utilise the new water landscape provided by the ZUS plan on which this studio is based. A group-designed masterplan also sets certain criteria to which my individual design must respond, such as minimising the footprint of the dwellings.

Process

There are many different methods used to answer the research question.

A literature review is used to gain a greater understanding of certain topics. Initially, it is used to define the context of the research question by providing data-based evidence for the problem statement, as well as identifying a research gap. This method is also used to define resource implementation principles, which are researched in greater depth to understand and extract the main principles around which they revolve. The case studies also rely greatly on this method to research and ultimately, understand the design choices of each project.

The case study as a methodology will be used to gain a greater understanding of the projects that represent each resource principle. This will involve many steps, including an analysis of the architect and their general design approach,

a context analysis involving geographic-specific insights, and a building analysis which involves a plan analysis, elevation and materiality analysis, an overview of construction, and three details with a focus on the resource principle.

A qualitative analysis will be used as a method to gain more insight into the case studies in the case that there is insufficient public data available. This includes methods like interviewing architects, as well as fieldwork where applicable.

Once the case studies and qualitative analyses have sufficient data, a quantitative analysis will be executed, whereby the Indicator Based Sustainability Assessment Tool for Affordable Housing Construction Technologies (Wallbaum, 2011) is used as a tool to analyse the affordability of each case study. This tool entails giving a score to each case study in respective topics - such as initial construction costs,

labour intensity, and durability - and calculating the total average for each case study.

Once the quantitative analysis is completed, a comparative analysis will be executed in the Conclusion chapter to determine the reasoning for the scores, as well as ensure the resource ideology with the highest score, is relevant to the site of the project.

To do this, I intend to consult theories of industrial ecology and housing economics as a whole, as well as using the framework indicated in the quantitative analysis. .

Industrial ecology is a principle based on means by which sustainability can be rationally approached; it is a system's view focused on the cycle of materials (Kapur & Thomas, 2004), whereby the entire system is evaluated, rather than in isolation (Mitra, Elhaj, & Rahman, 2023). This principle is important in the evaluation of the sustainable use of materials, as well as in designing with materials

in a systems approach.

Housing economics as a principle, concerns itself with the quantitative value of a house in the market, which thereby allows for ratios and trends to be applied to its value. This principle becomes of use when assessing the affordability of a dwelling qualitatively, as it allows for comparison. This principle bases itself on the evaluation of housing from a consumer's perspective, whereby "lumber, labor [sic] and land" are not considered.

I will also consult previous case studies done throughout my education as a basis of methodology, as well as interviewing methodologies discussed in previous courses.

Reflection

The studio topic is one that deals with water, and the future landscape of the Dutch polders. I have used this future landscape to create a model for my graduation topic that makes housing more affordable. My graduation topic, affordability and resources, is one that requires all detail levels to make it a possibility, which requires knowledge of urbanism and building sciences principles.

The work I propose for my graduation project provides a method of tackling the affordable housing crisis prevalent in the Netherlands, by utilising resources in a way that is affordable, as well as sustainable. It also uses the issues prevalent on the site as an additional solution, which could be used for other polder sites in the future, but can also be extracted as a methodology for tackling affordable housing. I have also created a new way of grouping resources that has not been done before, which could help as

a means of making scientific research more approachable.

Overall, my graduation topic is one that involves my educational topics, but is also relevant outside of my educational career.