

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

With the need for urban densification within our cities in light of its growing and changing population and demographics, it translates into a huge demand for material and space. Both of which are finite, therefore there is a need for options that can maximise both resources. Hence the need for strategies surrounding renewable biobased materials increases, the most common and accessible being timber. Additionally, the unpredictability of how our cities could change creates the added stress on its limited space. Hence, prudent strategies that create allowances for change and infrastructure to react accordingly to these changes are necessary. Therefore, this project investigates how these changing needs can be met through adaptive timber construction within non-residential infrastructure and how these non-residential functions can adapt to these changes over time.

*2. How did your research influence your design/recommendations and how did the design/recommendations influence your research?*

Through the research the value of adaptivity and allowance in architecture was apparent and therefore this came with the pursuit for a system within my construction that will introduce and encourage this adaptability. This led to a strong focus on the structure of the building, borrowing themes from vernacular projects, resulting in the experimentation and testing of various possible systems. These experiments resulted in engineering structural frames that would be able to introduce this flexibility to the project. However, this brought about the challenge of understanding how this flexibility relates closely to the frequency of use each system could expect to face. Thus, resulting in a need for determining the various degrees of permanence within the structure and in the eventual layers within the building itself.

This adaptability was also based on predictions from the research phase, “what sort of functions are needed and when?” and this allowed for the tapering of the project down to specifically meet these needs. However, during the design phase this theme was undertaken with a loose hand where minimum spatial requirements of each function was met through a range, in which different possibilities would roughly meet these requirements. This led to the scope of the project expanding hence, it was important to return to the research to discern which functions and spaces were to be prioritised and focused upon.

*3. How do you assess the value of your way of working (your approach, your used methods, used methodology)?*

The initial trajectory of the project being one that aimed to tackle multiple complex problems within the development of neighbourhoods, resulted in a scope much greater than the time span allows for. Hence the earlier stages of the project opted for a broader approach, focusing on the urban setting of the neighbourhood and the eventual building site. Substantiating reason and role that the building will eventually play within the greater scope of the urban setting. Hence, this approach resulted in a study of existing neighbourhoods in and around Amsterdam in ascertaining an understanding of the status quo. This approach gave space to the exploration of how these neighbourhoods may develop and what sort of interventions would be ideal within these scenarios. However, this approach was time consuming, requiring me to survey these case studies and the limited time inhibited me from attaining entirely representative data as often there was only a single visit to each site at one point in the day. This approach ties into the challenge of trying to tackle these large problems and questions whilst being limited by my resources.

This active approach became coherent throughout my research and design process where repeated testing and experimentation was introduced in figuring out how spaces and systems would work. During the design phase the challenge undertaken was to create adaptability within the building to best fit its functions and future functions, resulting in transformable portal frames being experimented with. This hands-on approach propelled not only my thinking but also my understanding of how these systems could work through a repeated process of trial and error. However, the main drawback of this approach was the attachment grown to certain ideas and ideals that had been construed through my own design. This stunted my progress at times as I was hesitant on completely moving on from these concepts to experiment in new directions. Eventually compromises were made but this came at the cost of the time that I did have. This focus on developing my own systems which led to interesting innovation turned out to also limit my progress as I sought to resolve its issues through my own means rather than sourcing for solutions in external references. However, despite its limitations my approach and process has allowed me to investigate adaptive timber construction through this hands on approach, allowing me to have a more in depth understanding of how, how these systems work or could work.

*4. How do you assess the academic and societal value, scope and implication of your graduation project, including ethical aspects?*

With these expected changes within Amsterdam, the changing and growing demographics and challenge of limited urban space, it becomes imperative to explore new strategies and ideas to maximise this limited space to meet these needs. This research begins with largely an urban perspective on how space can be allocated strategies centred on ensuring that the available space is conditioned to be future-proofed, allowing for new functions to easily be added to meet these needs. At the same time this research serves as a starting point in understanding the existing strategies within Dutch neighbourhoods and the creation of a catalogue on these various methods. This also gives insight on how these neighbourhoods can be expected to evolve in both the near and distant future. The documentation methods undertaken can be repeated and refined over the other neighbourhoods to provide a more complete understanding of how our neighbourhoods develop and how non-residential infrastructure is implemented to meet their changing needs.

This project also seeks to be representative how a building can tailor itself to effectively house these changing functions as demands change. And acts as step in the creation of a system that would be able to stand the test of time as people and functions change and pass through it, whilst being able to still reconfigure itself to best suit these demands. This lightens the strain on new materials in construction and increases the efficiency within the building industry as construction time is also truncated, allowing for quick reactionary adaptability to new demands.

*5. How do you assess the value of the transferability of your project results?*

The use of adaptive moving structures within architecture is extremely relevant as human demands continue to change at exponential rates. And it is only logical for construction to be built to be able to respond to these needs. Currently large scale moving construction is mostly found within temporary pavilions and construction, this the introduction of adaptive components within more permanent and potentially large scale construction is essential in alleviating the need for new architecture or architecture that is not suited to its housed functions. This adaptability will always be relevant within every project though it may not be expressed the same way as through timber where adaptive changing construction allows for the form of a building to morph to best accommodate its functional spatial demands.

6. Through this project, what were the main challenges in realising the project and were there any compromises made during the project?

In architecture, anything moving brings about additional complications in not just the structure but also in the entire system. Therefore, in the introduction of large scale transformation a balance needs to be struck on the opportunities and benefits each degree of transformation brings as well as the additional complications and complexity it brings to the system. Therefore, as earlier mentioned there needs to be a strong understanding of the permanence and temporality of each element and its degree of adaptability. As well as how it relates to the frequency of use, where more readily adaptive elements would be tapered towards the more frequent adaptations. And this balance was hard to strike as for each adaptation there were several potential opportunities and attempting to limit these opportunities seemed initially counter intuitive. However, it allowed for the these elements to better suit these prioritised opportunities and more effectively house these functions.

Large degrees of adaptability within large timber architecture are not currently commonplace, hence through the project the references worked with were not always ideal. With these moving joints adaptive furniture was used as inspiration which led to the complication of converting systems across these scales, especially when considering the different loads. Therefore, with this conversion of systems approximations had to be introduced where these systems are assumed to work when scaled to the building scale.

7. What are future potential limitations in furthering this project and in its implementation?

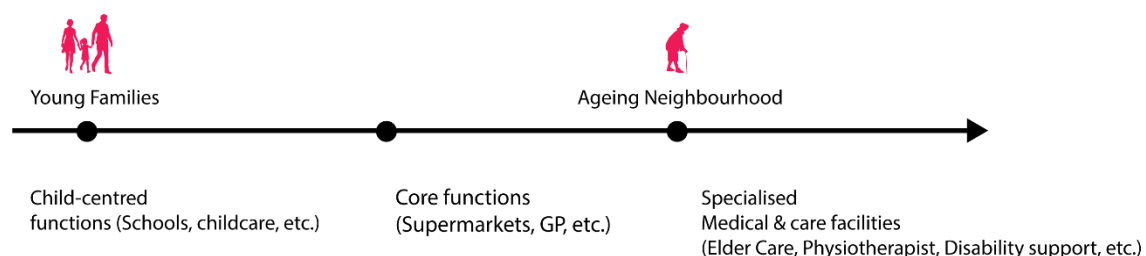


Figure 1: Prediction of the progression of Neighbourhood functions along with its Key Demographic

This project predicts for a very linear development of the neighbourhood around it and the usage of the building itself. In reality, the development of the neighbourhood population can not be predicted with absolute certainty as it will develop in more directions than just one, meaning these changes and demands will occur simultaneously at varied rates. Therefore, when considering how the building would transform and adapt over time, it becomes harder to predict how it may be used by its users. Additionally, the manner in which the building is adapted over time can only be introduced as a guideline as its future users would have varied opinions on how its is used or not even adapted at all. Therefore, when designing it is important to broaden the possibilities on how it can be used or transformed to attempt to meet these possibilities.