ITERATIVE LIVING: A PLAYBOOK FOR ADAPTABLE INTERGENERATIONAL HOMES

Emilee Z Chen
Main mentor: Loes Thijssen [Architecture]
Second mentor: Max Salzberger [Building Technology]
Third mentor: Anna Lisa McSweeney [Research]

REFLECTION.

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

The overarching topic of the studio is "timber for urban density" in the city of Amsterdam. As such, my research started with the dissection of the specific qualities of timber which make it the best choice for densification – lightweight, compatibility with design for disassembly, and easily managed by self-builders, with the objective of using its potential beyond its role as a sustainable alternative to carbon-intensive materials. The challenge lies in incorporating timber into the building stock, not merely as a replacement material, but as one that establishes a distinct architectural and functional impact. In the examination of timber's role in intergenerational living models and flexible housing typologies, my work aimed to contribute to the studio's vision of furthering the widespread use of timber in the architecture field.

How did your research influence your design/recommendations, and how did the design/ recommendations influence your research?

My final graduation project is heavily intertwined with my research through an iterative process. The research topic initially started at the intersection of two issues – the social aspect of how adaptability can improve our housing stock, and how timber and other bio-based materials can be encouraged to be used beyond being seen solely as an environmentally friendly alternative. To this end, the concept of a playbook was conceived – a manual and guide that would highlight the needs and specifics of community and intergenerational living, how spaces can be adapted through time to fit those needs, and how they can be achieved best with material strategies using timber.
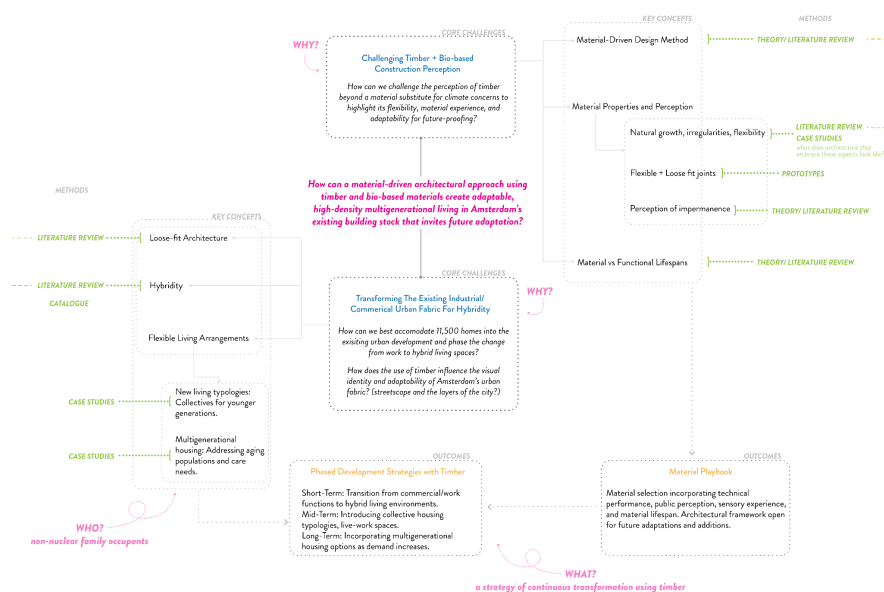

Figure 1_ Initial Research Plan Diagram

Through the research phase of the project, the goals and outline of the playbook were formulated, as well as some of the main strategies. These formed the guidelines of the design going forward – establishing who I was designing for, why the ability to adapt is so important, and what aspects of building design needed extra focus to achieve the desired goal. Through case study research, I was able to dissect both intergenerational housing projects, and adaptable and incremental housing projects, positioning my final design at their intersection, defining the typology of building. Then, the technical aspect of adaptability directed the research into timber connections and material selection, which would also become a driving force in the design.
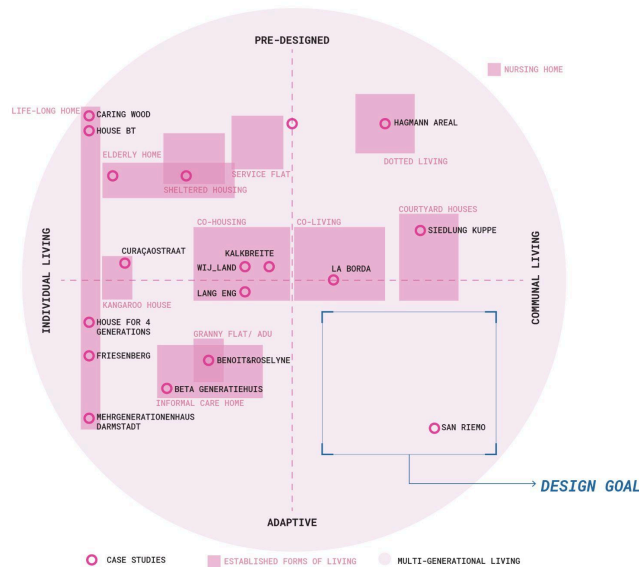

Figure 2_ Defining Design Typology Through Catalogue of Case Studies

Because the research occurred at many different scales – urban/ societal, building, and material details, as well as the different time scales at which adaptability occurs, the design process then also constantly worked between different scales at every step of the iterative process. Although the initial framework for the playbook was developed through the research phase, a lot of the content and specifics were then filled in through the design, creating a circular process in which the strategies found through the research and playbook influenced the method of design, and the details and findings that resulted from the design then went back into the different sections of the playbook.

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

Once the main research question was established, three methods of research were identified to be best to tackle the scope: literature review to study the theoretical and overarching themes and how they overlap, case studies to dissect the specific guidelines to design with, and prototyping with connections and materials at real-scale to test the feasibility of the ideas driving the project forward. As the aim of the project is the creation of the playbook, the research had a broad subject matter to cover, in both the social implications and technical aspects of adaptability, and this three-pronged approach was a good way to cover all the aspects and how they work together to strengthen the overall objective of the design output.

In the design phase, the prototyping method continued to drive forward the iterative process. Because the overall design starts at the small scale, with the way the building elements are put

together, and then aggregated at the larger scale, the testing at 1:1 became imperative to the process. For example, the strapping method is pitched as an alternative to simple fasteners to connect light timber framing members, in that it is a method that can be easily reversed, tactile and encourages users to interact with the building assembly, and causes no damage to the material for maximum possibility of reuse. The way that the members fit together in this connection method in 1:1 scale is then extrapolated into the overall larger building design, and the same principles are then applied to the overall design approach.
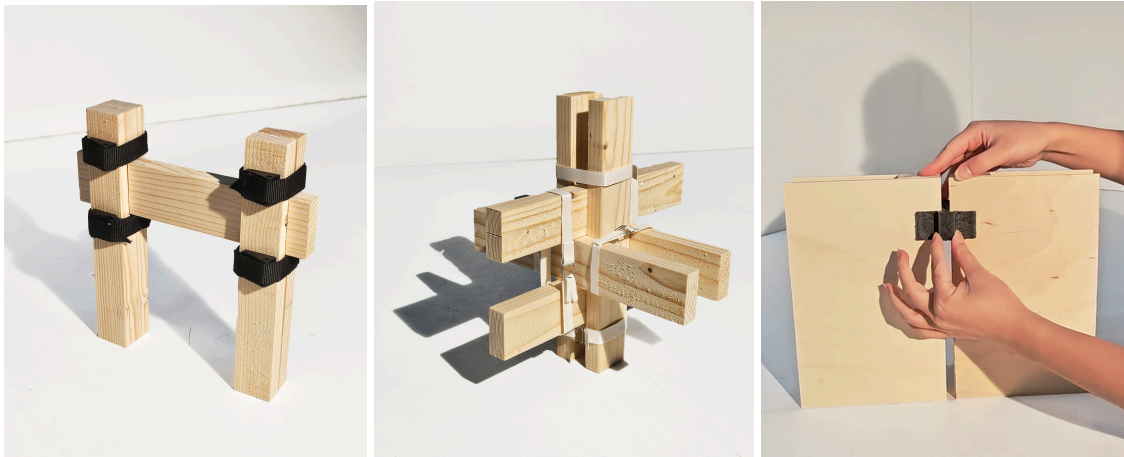

Figure 3_ Selection of 1:1 prototypes made for the connections catalogue

How do you assess the academic and societal value, scope and implications of your graduation project, including ethical aspects?

My graduation work addresses the continuing housing crisis and sustainability challenges in urban contexts by exploring adaptable architecture through timber and bio-based materials. Socially, it responds to shifting demographics and diverse and changing living needs through various stages of life, proposing flexible housing solutions like intergenerational living. This alternate housing type can create a strong sense of community for the elderly and increasingly individual households in the Netherlands, and could also potentially free up a high percentage of the owner-occupied housing market in the country—properties currently owned by elderly people who might choose to move. Within the field of architecture, it aims to contribute to research on adaptability, offering and reviewing strategies for material reuse, design for disassembly, and long-term resilience. The methodology of the research intersects both social and technical aspects of design to further timber's role beyond a carbon-neutral material to one enabling innovative, sustainable design practices.

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

Although the project started with directly responding to real-life issues and scenarios, I think I approached the project in a somewhat idealistic way, sometimes having to remind myself of the intentions and specific people to keep myself grounded in a project that tries to argue that almost everything is possible. Throughout the project, my target group has been people interested in intergenerational and community living, but the approach to adaptability is one that is a bottom-up approach due to the use of timber. This idea of maximizing the compatibility of timber with self-building came from a personal experience — growing up in Canada in a house with a workshop in the garage and a dad who built sheds in our backyard and neighbours who were always doing renovations. To me, a family home is somewhere you have the agency to change the space in which

you live, and I wanted to bring that aspect into the high-density city-living that is required in Amsterdam. The design is just that — a co-housing complex where there is dedicated space to grow and change your home, and a playbook manual that details how you can achieve it on your own with materials and components you can source from within the building or elsewhere, as long as they fulfill the criteria outlined. Although the building concept can be seen as overly idealistic about how many people would embrace this self-building approach, I believe this concept could be more effective at a slightly smaller scale. Rather than jumping from the approach of single-dwelling living to an 18-storey building, the idea would be more feasible in a mid-sized complex housing 10-20 families.

On the other hand, I think the way of designing through the playbook has been a very successful one — it became a framework for the design decisions made, clearly outlining the goals of the design, and documenting the strategies taken. When it came to the building engineering and detailing, it also became a catalogue of the connections, materials, and make-up of the building, establishing an understanding of the building to allow for future adaptation or end of life. Having this catalogue and reference book for the design, and designing with this idea of continuous adaptation, results in a design that is very aware of its makeup and projected future in mind, extending the architect's responsibility for what we build beyond when construction is finished.