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studio

name of studio: Architectural Engineering, 1 million homes

teachers:

design:	Mauro Parravicini
research:	Marcel Bilow
building technology:	Marcel Bilow

choice of studio:

Coming from a technical bachelor, I like to think from an engineering perspective. The combination of architectural designs that incorporate technical/engineering solutions is something that has my interest and that I want to develop further. The AE chair has been a choice to further explore and research within the combination of this fields. Also, I believe that first of all technical research is what is necessary in the built environment today to address the urging transition towards a circular economy. Furthermore, the studio gives space to research a specific challenge (within a certain domain) that one likes: which I think is a more diverse and more personalized learning environment. By thereafter sharing each others individual research challenges within the studio, we all learn more about various topics. I would like to contribute to that.

title

OB-DFD (Open Building - Designed for disassembly)

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goal

The objective is to design an open building in order to think and research about this typology or philosophy as a valid option for certain characteristics needed to tackle the one million homes problem in a circular way. What are, for instance, the beneficial results if we would build these houses in a more flexible way in relation to the transition towards a circular economy. Within the design of an open building, research can define how to categorize certain flexibility aspects and how to design with those aspects. Regarding circularity or design for disassembly on a detail scale, the objective is to design for remountability in order to better accommodate the proposed cycles of elements in a circular product design. With the development of an evalution model, the connections can be tested in relation to remountability. Case studies are conducted to contemporary open building projects to get more knowlegde on the typology. Literature studies are needed to define what flexbility means and how it can be evaluated. The combination of these aspects form the principles of the remountable design of an open building on the project site of Groningen.

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01// Relationship between research and design.

The research started with a personal fascination in the field of the transition towards a circular built environment. In the beginning of the process theme were introduced and discussed within the studio which I wanted to explore more:'Design for Disassembly' and a renewed interest into 'Open Building'.

In order to approach the research within the theme of 'Design for Disassembly', several methods have been applied. First of all, a literature study about the subject has been conducted. Within this, a group of students acknowledged that there wasn't a method of measuring 'DfD' within the built environment. The group of 4 students, including me, started to work on a literature study and practice-based research in order to develop a measuring system for remountability. Within the field of product design, there are some measuring systems available, which we used as a correlational research. By transferring these systems to the built environment, we had to make use of practice-based research. We used the scientific research from a different discipline, which makes the design of the created measuring method cross-disciplinary.

Looking at the provided scheme of GXN and 3XN (2018), in our group research we have been mainly focusing on measuring the remountability of connections. As previously mentioned, more elements are evident within this theory. To broaden the work, I wanted to study more about 'flexibility', a subtheme within the 'service life' principle, which GXN and 3XN describes as: "Making a flexible building design that allows the functions to adapt and change in the future" (GXN/3XN, 2018, p. 39).

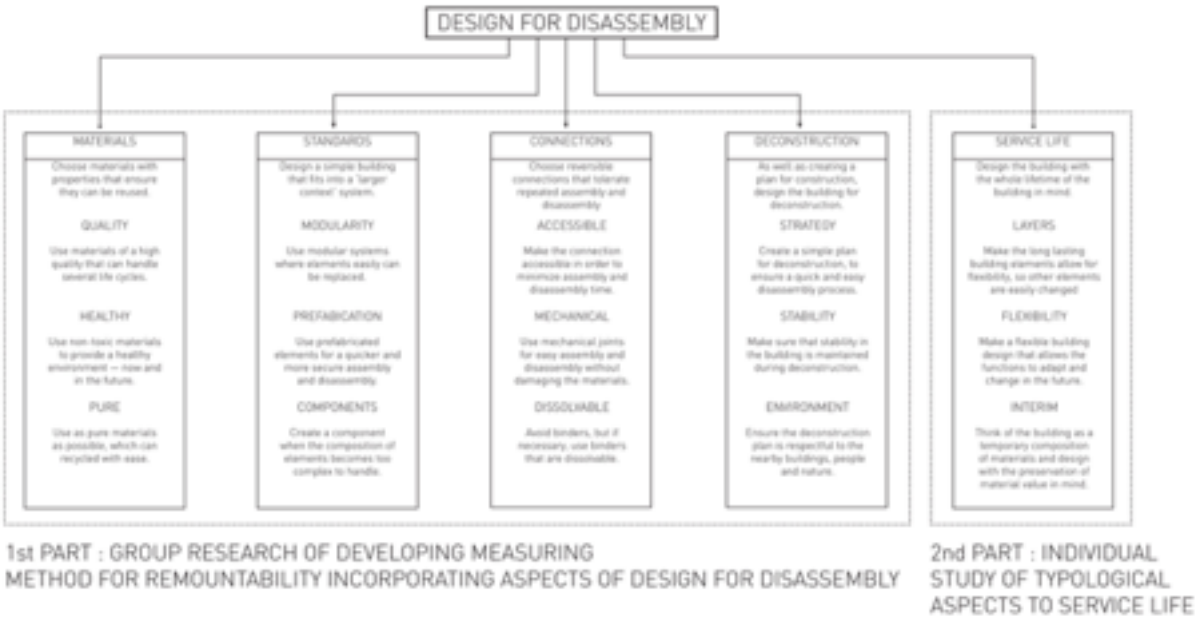

Figure 1. Framework of research paper, divided into two parts
Adjusted from "Building a circular future", by GXN/3XN., (2018). Retrieved from: https://gxn.3xn.com/wp-content/uploads/sites/4/2018/09/Building-a-Circular-Future_3rd-Edition_Compressed_V2-1.pdf

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01// Relationship between research and design.

With the group work we could establish an evaluation model with various themes which was directly usable within the design of a building connection. Although filling in the complete evaluation model for every connection in the building would have been too time consuming, I knew the most important criteria for 'design for disassembly' which I used intuitively in the (technical) design. So reflectively, for me, the evalution model was too detailed for the practical implementation in the design process. Within the Open Building research I conducted three case-studies. By conducting case study research, an inquiry could be made in order to understand the main principles of the contemporary 'open building typology'. This ended up in a toolbox with practical knowledge on patterns of an Open Building that could be directly implemented into the design. This was a very helpful method to understand and translate research into design, which I want to keep using over time. So both the group- as the individual research gave a lot of input for the design and certain decisions could be substantiated by, for instance, the precedents that were researched.

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02// Relationship between graduation project and studio/mastertrack.

Referring to challenges where AE is working on, the drastic transition from a linear- to a circular built environment is many times point of discussion within the studio. This was from my point of view the most pressing matter. In order to achieve a circular future within the built environment, certain research has been written and made available for the students to acquire general knowledge about these subjects. This was very helpful to give direction to your own research topic and kickstart the project. Next to this, lectures and excursions are organized in order to show interesting topics which relate to AE and the 'one million homes' question. For me this was valuable, as I see myself as a person who wants to stay in close relationship with the 'real world'.

A lot of the available literature is focussing on this transition towards a circular built environment and is related to 'Design for Disassembly'. Within our studio there has also been a renewed interest in the 'open building' legacy of John Habraken. It helped that I felt personally interested by both themes and tried to combine them into the project.

So both research themes fit within the scope of the studio and there were several different ways to acquire knowledge about the various themes. The studio itself organized a lot of events which were directly useable within the personal research/design. This was ofcourse an efficient way of following the process.

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03// Elaboration on research method in relation to studio methodology.

In the AE studio, one can individually research and choose a specific site where the choice of both have to be substantiated. Ofcourse the thematic research has to be somehow connected to the design and should be fitting in the (wide) range of themes that are relevant within the studios school of thoughts. The variety of possible research and design projects within our studio embody the overall philosophy of AE for me. It starts with a (technical) fascination which can be explored in depth with methods that are most suitable. This was for me the most interesting part of the philosophy, where different scales of projects and themes were researched.

In my case, I realized at a certain moment that the technical fascination into building connections was important input for the design, but were not enough for the overall project. It is therefore an important element within the studio to choose a design site in an early stage. This way research and design can continuously grow and become united.

Reflectively I realized that it is important to dive into and research one or more specific themes that forms the most important aspect of the design. It helps to give initial form to a starting project. However, it is also about keeping track of the overall design challenges with all the variables that are also evident. A building can not emerge with only knowledge about 'Design for Disassembly' and Open Building. This is also where the tutors come in and help to make it a holistic project with all architectural elements adressed.

Figure 2. Site visit, own work

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04// Elaboration on project and wider social, professional and scientific framework.

Within our studio there is a strong emphasize put on discussing the entrepreneurial aspects of the future architects and their role. We have seen that during the site visits of the open buildings, where in some case the architects were also the developing party. In other cases the architects found themselves the end-users and set-up a so called 'CPO', where also the role of the architect was evolving.

Reflectively, this is going to ask more of our generation of architects in terms of flexibility for instance. Discussing my individual position, I am looking forward to a more diverse role of the architect, with a more involved attitude within the complete process while on the other hand giving more access to external parties to decide within the design process. Because this is also something which defines the position within architecture I am willing to take.

I think there are ways, also extensively discussed within our studio and part of the typology of open building, to include the end-user more in the design process. In what way can we give the end-user more the ability to be included within the process, gaining ownership over it. As described in the book of van der Werf (1993) within the school of thoughts of 'open bouwen', there was already a sense of this where people had more options to choose from within the design phases.

Taking position, I firmly believe this is easily incorporated within the ideas of the architects' spatial concepts and adding a certain sustainable aspect to the design. Because these options could provide a certain involvement within the process, the idea is that they are more owner of the building and identify more, presumably enlarging the life cycle.

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05// Discussion of ethical issues and dilemmas.

There are however evident downsides to this strategy, highlighted and discussed during the studio meetings. For instance, finding the balance between the guidance role of the architect and the scope of influence of the end-users within the final design.

Finally, architects are educated and researched about high quality spatial solutions for the built environment. So, it is always important to have the right arguments why to avoid certain approaches. I strongly believe that virtual reality can have a beneficial asset to this via more immersive simulating research and design. Within my experience as a designer, it is evident that for people without architectural education and sense of scale and reading architectural drawings, this can be extremely challenging and leading to misunderstandings.

I strongly believe that the role of the architect is (always) changing, for now more in an entrepreneurial- and diverse role, wherein we might need to give more freedom for end-users. Although maintaining the architectural quality which always should be protected and being able to add valuable critiques within a certain architectural approach, substantiated with architectural research.

Ofcourse a major change within the graduation project was the covid-19 crisis and all the necessary restrictions. For sure this asked a lot of flexibility and adaptability of each student and tutor, which also can be reflected on. Looking at other projects I did during my studies and work, I reflectively can state that I want to discuss projects with fellow students or colleagues in close contact. Bringing projects outside and altering them with the input of other students was something that was less present in this project. Looking back I realize that I could have invested more effort to create something that gives the same value and feeling of studying at BK. Although the tutorings were, within the circumstances, very professional, fruitful and helpful in the process.

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