Reflection

During this project the research and the developed products influence each other a lot. First of all, the intended products determine the type and aim of the research. But on the other hand, the preliminary research into the topic also informs what type of product is needed in practice and what requirements it should pass.

Furthermore, during the research it becomes possible what can and cannot be achieved with the products. This is also dependent on the chosen tools and methods for the research. For instance, grasshopper and karamba were chosen for the development of the computational workflow. Within grasshopper and karamba the components are limited. Therefore the possibilities of what can be achieved with these programs is limited. As a result the development for the computational workflow was an iterative process of learning what is possible within these tools and how to achieve the goals within these possibilities.

The development of the product is also a research on its own. The approach taken during this project could be reused or adapted in order to create a new but similar product. For the computational workflow this could include adding new types of scenarios, or investigating different types of building structure.

Overall, I've been pleased with the process during this project. The used methods and tools work well to achieve the desired goals. This was especially the case during the preliminary research phase with the use of interviews. The combination of literature review and interviews with firms led to a good understanding of how theory relates to practice. Furthermore the results of the interviews led to unexpected insights, which influenced the focus of the project and research questions.

The interviews did lead to an ethical issue, as permission is required to make the results of these interviews public. This permission was not explicitly asked during the interviews, therefore a form was sent out afterwards for the interviewees to confirm permission. If the interviewee chose not to give the permission to mention their company, the information was anonymized.

Even though the focus of the project followed from the preliminary research, it was more difficult to determine the scope of the project. The tutors pointed out that I wanted to achieve too much to be feasible in the time frame of this graduation. In the end I decided to focus mainly on the computational workflow and less on the demountable connections themselves.

By focusing on the computational workflow, the aim of the research shifts more towards an academic field which has not been researched a lot yet. There is currently more information available on circularity, adaptable buildings, and demountable buildings than on the incorporation of computational workflows into the design process. The current research is even more limited on topics relating to both computational tools and circularity. By combining these two topics, this research can be a valuable addition to this research field.

The research can also be valuable to the current practice. The research aim is based on the knowledge of the current practice, acquired during the interviews. The shift in aim was due to the realization that the increased costs are the limiting factor for demountable buildings being constructed. So the costs could be reduced by determining the minimal

amount of changes needed, and therefore the minimum amount of demountable components.

Due to this decrease in cost this research could stimulate the creation of adaptable buildings, if put into practice. This should lead to a more circular building approach with less material usage. However, the application of this workflow into practice is still limited. Only one type of building system, and two types of scenarios are incorporated into the workflow as of now. If the workflow was extended to incorporate more of these aspects, the workflow could provide a more complete comparison and therefore be of better use.

These two topics of adaptability and computational workflow, also relate to two important topics within Building Technology, being circularity and computational design. In specific, the research is part of the design for change research topic, which relates to the adaptability of structures. As this research combines computational tools with the topic of adaptability, this connects well to the broader research topic.

By placing the product within the design process this project relates to the broader topics of the AUBS master as a whole. When put into practice the workflow could be used to better inform the design of adaptable buildings. This is also achieved by testing how such an adaptable building could be made in practice, by researching demountable connections and by testing the workflow with a testcase.