

TOWARDS AN EVERLASTING ARCHITECTURE

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I. REFLECTION

1.1. What is the relation between your graduation project topic, your master track (Ar, Ur, BT, LA, MBE), and your master programme (MSc AUBS)?

The construction industry plays a significant role in causing the climate crisis, accounting for 39% of global carbon emissions per sector (Fig. 1). Of this, the so-called operational carbon (OC) is the larger part with 28%. The OC is emitted during the service life of buildings through use (e.g. heating, electricity, etc.). With 11%, embodied carbon (EC) is a smaller but no less important share. It describes the carbon footprint of the building materials used. (UNEP & IEA, 2017)

There are numerous tools to reduce energy consumption during the use of buildings and operational carbon. Both passive and active measures can help to save and even gain energy, so that it is possible to build houses that are 100% self-sufficient. This project therefore focuses on the other side: embodied carbon and possibilities to reduce it.

Since the entire master's program is largely based on the teaching of sustainable architecture, this project deals with a counter-proposal to current trends such as pure timber construction.

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

The Architecture track combines research with creativity, which is also the case in this project, as it consists of a scientific paper and a design based on it. The research was based on the initial fascination with long-lasting architecture and the idea that one could build more sustainably by using buildings and their embodied carbon for longer. In terms of time, there was a very clear separation between research and design, as the design was based on the results of the research. Nevertheless, during the design process there were always new insights regarding the research.

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

The given working approach was generally new to me, as I am used to separating research and design less from each other, but it was an instructive challenge to build everything up chronologically. In research, the individual approach was to examine case studies, which had an inspiring effect on the design. In the design process, there were a few crises due to the very fine line between utopian and realistic ideas.

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

I think that this academic thought experiment can open new ways of dealing with embodied carbon. The idea is certainly not completely new, but it is important that the construction industry is diversified in terms of sustainability. This alternative to building with wood etc. could be an approach. However, projects of this kind would be a social challenge, as the financing would have to be considered in the much longer term, as the frame would stand for centuries. It is questionable to what extent individuals would make investments that would last far beyond their own lifespan.

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

As already indicated, the technical feasibility and general utilisation of the building is easy to implement, but it would be questionable whether investors would finance such a flexible (and therefore expensive) project. In reality, a clear time frame would probably have to be defined for façade changes/additions. It also depends on whether the building is owned by a company or individuals.

1.6. What were the biggest challenges during the process of almost one year?

There were some personal challenges for me as the sole executor of this graduation project. Firstly, I was not used to working on a project for such a long time. Normally, my preference is not to work on a design for longer than 12 weeks, as my motivation can then be very high on a consistent basis. Of course, with a project lasting a year, there are highs and lows in terms of motivation. This was also intensified by the fact that everyone in the Architectural Engineering studio works very individually and there is little comparability and therefore less interaction between the students.