RExLECTION
Lian Blok, February 2019
Delft University of Technology, Faculty of Architecture, Explore Lab

The explorative design of a growing dwelling;
‘How can a growing dwelling contribute to biodiversity in a low biodiverse context?’

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PROJECT DESCRIPTION
This design assignment 'The explorative design of a growing dwelling' was carried out to gain more
knowledge about not only the integration of nature with architecture but also the use of nature as a
building material in architecture. Research has been conducted into low biodiverse contexts and the
directly related causes, the use of organisms as building materials, the environmental influences on
these building materials, and the added quality that the integration of organisms can offer for a
dwelling. Different possibilities have been investigated, a prototype has been designed that shows
the realistic applicability of the research.

RELATIONSHIP BETWEEN RESEARCH AND DESIGN
In the first half year, the focus of the graduation process was the research, the second part of the
year the focus was on the design process. In the transitional period of the research into the design, I
figured out there was a lot of additional research needed. During the entire process, I had contact
with my design supervisor and my research supervisor, this has ensured that the integration between
the research and the design fits well together in my opinion. Because the research is the basic
knowledge to express the possibilities in the design, there is a strong relationship between the
research and the design.

THE RELATIONSHIP BETWEEN THE PROJECT, THE STUDIO TOPIC AND THE MASTER
PROGRAM.
I wanted to learn more about the integration and use of nature in or with architecture during my
study. The studio Explorelab gave me the unique opportunity to make this possible. In the past year,
I learned a lot about both the processes in nature and the practical use of nature. I have also learned
how much is focused within the master program on designing spaces for people, while there are
many other living organisms on the earth that currently have little architecture for. I found it
difficult to not always think for the benefit of the human user of space, but also to take into account
the wishes of other living organisms such as fungi or plants. For example, the living room is a space
where people like to sit in the sun, but where plants also grow the best. Not only the location in the
north/south or in or out of the wind plays a role, but also the shape of areas. Furniture, floors and
walls are often designed to be stable and thermally easy to connect, but growing materials do not
grow straight. This creates mental design blockades which in my opinion is very important to
develop.

METHODOLOGY AND SCIENTIFIC RELEVANCE
As a method for this research is chosen that interested me the most and, in my opinion, fits very
well within the studio: ‘to explore’. I have applied this methodology by experiencing as many
things as possible; overstay in dwellings closely connected to nature, visiting companies who
produce materials of living organism and conducting interviews with expert knowledge on
important topics on the research. By experiencing things, other senses are used such as feeling, smell and sound. Nevertheless, experiencing knowledge is required with literature research to generate a scientific context. By being fully focused at the start of the research on the experience and not yet with the scientific relevance of this, information has unfortunately been lost. As a positive effect, this has contributed to the development of my vision for both research and design.

THE RELATIONSHIP BETWEEN THE PROJECT AND THE WIDER SOCIAL, PROFESSIONAL AND SCIENTIFIC CONTEXT.

Although this design assignment was chosen from my own interest, I found out that this is a very relevant subject nowadays. This was evident, for example, from the fact that various relevant literature emerged during the writing process of my research or that relevant literature had not yet been published and could therefore not yet be used. Some practical aspects relating to building with living organism have not been studied much, and therefore not much information is available. For example, building with living mycelium has not yet been practised in reality because the building certificates are not specified on material which transforms during the time, so there are no architectural examples yet. I found it very difficult to translate the aspects that were studied from experiencing into relevant information for the research, although it has contributed a lot to developing a vision for the design assignment. Ultimately, analysis drawings translate the experience into relevant information for the research. The project results have been made transferable by developing a prototype, this shows the realistic feasibility.

ETHICAL ISSUES AND DILEMMAS

Because this project has a strong connection with biology, I have had to learn a lot during my research on biology. The lack of knowledge of biology made it difficult to specify the formulation of the main research question very quickly. It was also difficult with this lack of knowledge into biology to regularly look at the project with a helicopter view because I did not fully see which aspects were missing out. I also sometimes lost myself in my interest in specific parts of biology, without the connection with architecture remained in the background. The architecture not only remained in the background sometimes but also started later because there was first sought from a broad perspective to designs with nature. Once the focus was on the design process, new dilemmas arose, for example designing for other organisms instead of a human, without knowing their needs. Also, an automatic thought was thinking in straight lines, while all living natural building materials are not straight. By thinking about the thermal layers in a house, which are essential in Dutch conditions, the design soon becomes a house floating in a garden. Because of this blockade, I have postponed some decisions until the last moment; for example, defining the materials for the roof or the walls. During the design process, I usually work a lot with computer programs such as Sketchup and Autocad, which provide a fast visual result. Growing organisms that have a new look per season are a variable element and at the same time the most important element in this project. It took a long time before I had found a way to deal with it which still I find it very difficult. In the development of the design, I already knew in advance that many aspects of the design are still too innovative to work with architectural and technical examples. Also in this process, I encountered several technical problems with regard to the straight lines of building materials to isolate thermally closing and the curved lines of living nature; for example, the straight floor that is placed on a curved branch. Finally, it was a challenge to make the process of growing elements visible in milled drawings. I learned a lot about the importance of biodiversity integrating into architecture, designing with organisms such as mycelium and plants and different spatial qualities for other organisms as humans.