



## **[SEAWEED] FARM TO TABLE**

Reflection

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I have long worked with seagrass as a material for design and construction in the Danish building industry, but after my undergraduate thesis, seaweed farmers from around the world began to approach me about using algae in construction. They wanted to know if it was possible- in part due to algae's ability to be farmed large-scale, and in part due to interest in using building materials as a way to sequester the carbon dioxide in the plant matter.

Shortly after moving to the Netherlands, I found my inspiration for my master thesis: a bike dredged from the canals, covered in algae and freshwater mussels.

We say often with food "what grows together, goes together" so I decided to explore this material relationship through construction with mussel, seaweed and seagrass farming. This inspired the name of my thesis, which is a play on the concept of farm to table. Farm to table is when food for a restaurant is sourced directly from a farm and often served locally. In this case, the building itself is homegrown from local marine materials.

For the research portion I decided to go with a material driven design approach, to create feasible wall materials from these materials. In order to do so, I took classes in clay plastering, visited material producers and seaweed farms in person. I also examined the historical relationship of these materials and used it as the basis for my experimentation. The outcome of my research is a manual on how to design with these materials in the Dutch building industry, with three one-to-one scale prototypes of seaweed constructions.



I made a distinction between the research I did for my thesis, and the analysis I needed in order to flesh out my overall building design.

I am a designer that learns from my surroundings, especially by sketching. I took time during the research portion to make a lab book (also from seaweed) and use this to study the Netherlands, the landscape and farmhouses here, and documented my travels around the Oosterschelde, where seaweed grows in abundance. I was inspired by the way mussel farms traditionally worked with the water as a friend, harnessing the tides to clean mussels.

I decided to work with the Dutch landscape and the threat of flood integrated into my building design. I wanted to create a building that would serve as an experimental testing ground of the materials I created, but also serve as a home for researchers and farmers moving to Schelphoek, to work with seaweed and mussel farming, as well as local retirees looking to downsize.

I decided on building with an amphibious typology, rather than a floating house or a house with flooding barricades. In this way the house moves with the landscape and the water during the day. Schelphoek was chosen as a specific site in part due to its seaweed diversity and seaweed farm testing grounds, and in part due to its history. The original dam was destroyed in the floods in 1953 and the structure still lies partially submerged and collapsed around the Schelphoek coast. The new marine material housing complex serves as a beacon of hope for the area in the face of climate change.



Fig 2: Dutch vernacular analysis, contemporary farm houses

I have been told that my project works strongly as a building technology project, which is no doubt inspired by my undergraduate background in both architecture and architectural technology. Because of the Material Driven Design process, the tectonics are a heavy focus of my building and its design. However, I believe what sets my project apart from a typical building technology project is the sensitivity paid to the building inhabitants.

I designed the building in a way that would attract nature lovers looking for a way of life in balance with the environment, and people seeking a sense of community. I designed private terraces for inhabitants, with a special terrace for socializing, and tried to increase their feelings of ownership by having the residents participate in painting and maintaining the facades of their homes.

This understanding of how humans and nature occupy space is what speaks directly to me of architecture, and I tend to be fascinated with cultures and traditions. I tried to design my building in a way that speaks to Dutch building cultures and traditions, as well as the Dutch local ecology. I relied on comments I've heard over the past two years working in the Netherlands, working mainly as an interior designer, to shape the individual modules for target end-users. In particular, the Dutch attention to verticality in spatial design is something I tried to integrate, especially in the smaller housing modules.

I also integrated dunes into the landscaping. The Dutch landscape is a duality of natural, but man-made coastal protections. Dunes, dikes and dams are serve as infrastructure for nature, often times harboring different plants and grasses. The idea of infrastructure as ecosystem is something that I continually returned to during the design of the building and site.

At the end of the day I do not feel a need to limit myself or my interpretation of what architecture is. At several points during my thesis, I was told my interest went beyond the scope of what is expected for the architecture track- whether that's diving into material testing or performance, or spending time on exploring artistic applications and interpretations. Ultimately, the built environment and the world around me is what shapes the palette I draw from as a future architect.



Fig 3: Visualizations showing interactions between the building inhabitants and nature in a constructed landscape.