

In this reflection i will first explain my project and after i will reflect on the process and how it's positioned within the studio of hyperbody.

Hyperbody has set an exercise for students who are graduation on the design studio. For this exercise the student needs to develop a proposal for 6500-7000 sq. m. of student housing on the Green Village in Delft. The Green Village vision is to create a sustainable future together and that all starts with the health of the students themselves since they are the ones who's going to live there. Stress seem to have a really negative influence on the health but also the performance of the students. For this project i tackled this problem by reducing the stress level of students on their way home. During commuting students are often still outside the present. They take their work back home which can result in low quality sleeping and on long term even result in lack of performance at the university.

The concept therefor is to work with the route student take towards their homes. In order to give the route more meaning, spaces and function will be integrated in the route. Profiles on the route are never same. Edges of this route exist out of benches, shelters, workplaces and nature. Especially nature plays an important factor of fulfilling multiple function. Not only does nature improves the mental state of people but it also serves as shading, fall prevention and orientation of the spaces by the colours of the plants.

The goal is to relax the mind of the student on this route. Based on that the route is designed with smooth shapes in order reduce disturbance of the mind. By using flowing curves, shapes will never break in segments. This leads to less impulses on the human mind.

Once students will reach their home. The design languages and materialisation changes from free form abstract architecture made of concrete to orthogonal space efficient architecture made of timber. The reasons for choosing wood is because its a warm material that makes it pleasant for student to live in, but also because timber is sustainable and relative easy to work with. Where the concrete part of the building is public, the dwellings are personal and more temporary. After some years the interiors of the dwellings could be easily upgraded to newer standards.

All dwellings are orientated in such a way that one side is facing a space covered by an ETFE roof which provides the space underneath for additional passive heating. The other side of the dwelling will face regular Dutch climate. With a cold and warm side of the dwelling the space can ventilate passively. Hot air underneath the ETFE roof will rise and pulls the colder air throughout the dwellings. Depending on the temperature the ETFE roof can let the hot air out to regulate the temperature.

As mentioned before, the free form part of the architecture will be made from concrete. The overall form will be divided in building components. These elements will be pre fabricated. Based on the digital model a mold will be milled of expanded polystyrene and later reinforced with steel an poured with concrete. These elements will be stacked on top of the constructive walls of the dwellings and solidified together with freshly pored concrete. To insulate the dwelling polyurethane foam will be sprayed up against the inside of houses.

Computational strategy. The strategy to create and mostly generate the architecture is not only needed for fabrication but also for the design itself. All the freeform wished results are brought back to from roughly 64 faces to 4 faces per building component. From this reduction functions (bench, workplace, etc.) are assigned to different areas of the overal plan based on data. Then all the details will be generated by the grasshopper script. Faces will be added where needed and later on smoothed and polished to get the final result. For orientation of the user, colour will be assigned based on location of where the user is located within the plan. The size of plants will be planted according to the results of solar radiation inside the dwellings. And ceilings of the public space will be shaped according to structural analyses.

All these things will come together in functional and pleasant architecture in order to reduce the stress of students who are commuting from university to their home.

If i look back on the process i noticed that it took me too long before i knew this is the final concept. My first intention was to work with wood as a main material. Unfortunately this couldn't come along with my vision on architecture and the further concept of having a continues space. In the end concrete was definitely the material to work with. I only let this first intention go after p3 which was too late. Therefor also i couldn't use and integrate most of the research i did on wood.

Further i did got the opportunity to use different computational strategies for design and therefor did a lot of research on how i could realise the final geometry in an efficient way. This strategy fits the studio's philosophy of using computational tools for designing an digital informed building.