Graduation Plan

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Studio
Architectural Engineering (aE): Beyond the Current
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Title
Customisability for a better sense of home: Enabling participation in dwellings

Graduation Project
Problem statement
Dealing with the existing stock is the challenge for the coming decades in the Netherlands. At the same time, user demands and regulations increase and should be met.

Replacing the existing stock does not happen quickly as it still has some market value and demolition results in a lot of material waste\(^1\). Moreover, the impact on current home owners is large as they have to move away from the neighbourhood they know and have lived in for a long time. As a result, demolishing a building is at the bottom of the priority list in the built environment. Refurbishment of the existing stock therefore becomes a priority.

On the other hand we see the changing role of the consumer in today’s society, moving from a consumer to a prosumer, with personalised products\(^2\). The introduction of direct digital manufacturing\(^3\) makes it possible for consumer to customise the products they buy or even be produced for them specifically like the 3D printed bra from Mesh Lingerie\(^4\).

The demand for customisation has also entered the housing market and seems to be taking some ground\(^5,6,7,8\). iQwoning, part of Ballast Nedam, offers a modular housing concept which speeds up the construction process and cuts cost down. Future owners can choose from several dwelling types in order to possibly fulfil their needs as best. The downside from all these concepts is that they focus on new built dwellings instead of existing ones, with the ‘Klushuizen’ in Rotterdam as the only exception, but users need to do all the adaptations themselves or need to hire someone to do it for them.

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\(^1\) Power (2008, pp. 4489–4490)  
\(^2\) Chen et al. (2015, p. 618)  
\(^3\) Chen et al. (2015, p. 618; Sogeti VINT (2014))  
\(^4\) Twillert (2015)  
\(^5\) Discussion between young starters about preferred housing needs. Ouwerkerk (2014)  
\(^6\) ‘Dozens of housing concepts to better suit user needs’. TBI (2014)  
\(^7\) Modular housing concept, prefab built. iQWoning (2012)  
\(^8\) ‘Klushuis’, letting owners do much more on their own. CoBouw (2009)
One target group that most certainly needs a dwelling suited to their needs are the asylum seekers. They have been granted a longer stay and are in need of a dwelling, of which not many are available\(^9\). By making a building easily adaptable, it becomes possible to let the dwelling better suit the home owner’s needs which are different from our Western culture\(^{10}\).

**Objective**

The objective is to research what the possibilities are for users to customise their dwelling in an existing structure. This leads to fulfilment of market demands while keeping the larger social problem of the existing building stock in mind. Moreover, users experience a better sense of home.

Using new technologies should enhance the abilities of the user in adapting their dwelling, but an overview and vision should be kept by an architect on a general level. The initial goal is to let users adapt the layout of their dwelling as that is seen as most important\(^{11}\). Expanding the adaptations is off course possible if there is time to expand the research.

To let users be able to adapt their dwellings more easily an intermediate layer is added that is designed by the architect. With this method the architect can keep an overview of possible adaptations. This means, for example, he may supply users with several options he himself designs in order to create a homogenous architecture for an entire dwelling block, but from which the user can choose. User can extend these options with parametric design or to design, together with the architect, new options.

**Overall design question**

How can user participation be enabled in the Nemavo-Airey blocks and should this be done using CNC milling techniques?

**Thematic Research Question**

How has the user participated in the past, and how should this be done in the present day?

1. Why should users participate in the creation of their dwellings?
2. How has the user participated during the creation process in the past?
3. What product manufacturing paradigms are there and how do they work and differ from each other?
4. How can these paradigms be translated to architecture and how does this differ from what has been done before?

**Methodologies**

ANALYSIS / INTERVIEWS / LITERATURE STUDY / CASE STUDIES / RESEARCH BY DESIGN

Question one, two and three will be answered by literature study. Question four is a result of these previous questions and will build partly on literature research as well as own insights in the subject.

**Planning/(sub)goals**

P2: 10 June; P3: week 37 (working through summer vacation); P4: week 41; P5: week 46.

**Relevance**

While customisation has been part of the architectural debate for a much longer time, see for example *De dragers en de mensen, het einde van de massawoningbouw*\(^{12}\) (Habraken, 1961), the emergence of new digital fabrication techniques sheds a new light on these discussions.

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\(^9\) Bouwformatie (2016)

\(^10\) Koff (2016)

\(^11\) Boelens and Visser (2011, pp. 120–121)

\(^12\) In 1972 translated to *Supports: An Alternative to Mass Housing*
consumer seems to be more and more empowered to design their own products in several markets due to the introduction of new products like a tablet or smartphone.

Next to this technology enhanced network society, the need to feel connected with the direct surroundings becomes larger. Enhance social cohesion, liveability and neighbourhood development is seen as one of the more important topics in which people want to participate.

Next to this re-emerging discussion is the debate surrounding the existing and aging stock. The need for new houses could eventually come to a halt, while a little part of the stock is being replaced by new built. How can we use new technologies inside these existing dwellings that are in need of refurbishment? If today systems are applied that can be easily adapted, it becomes more easy to keep the existing stock up-to-date with the market demands.

References
Boelens, L., & Visser, A.-J. (2011). Possible Futures of Self-Construction: Post-structural Reflections of Ten Years of Experimentation with (C)PC. In L. Qu & E. Hasselaar (Eds.), Making Room For People. Choice, voice and liveability in residential places (pp. 103–128). Amsterdam: Techne Press.


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13 Kracht in NL (2015, p. 9)