Reflection

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Aspect 1: The relationship between research and design

Designing is an on-going cycle of divergent and convergent processes (expansion and contraction). It acquires a dualistic mind-set that on the one hand operates with a lack of inhibitions and on the other hand excludes that what has proven not to work.

Divergent processes (experimenting) are about forming incoherent ideas on different scales and domains. A convergent process is gathering a multiplicity of these incoherent ideas and forming a coherent web of interrelating ideas. Different versions of such a “web of ideas” are possible and by forming these webs (integral designs) some of the ideas happen to be excluded. An exclusion of substantial ideas is an indication that there is a need for new order which leads to a complete shift of the web. (Decomposing and recomposing).

A good design is a design that includes a great variety of relevant ideas and criteria on many scales and domains that together form a coherent whole.

Design is a research method. The designer has an internal library of solutions to technical and spatial challenges. It can happen, however, that experience falls short and no obvious solution is available. In this case an idea is not yet crystallised enough to become part of the design. This is where engineering as a different style of research can supplement the process.

Aspect 2: the relationship between the theme of the studio and the subject/case study chosen by the student within this framework (location/object)

The studio, architectural engineering, integrates systems, materials and techniques that are sometimes applied in other fields of practice to invent solutions to current challenges in our build environment.

The subject chosen; “enhancing daylight penetration and the energy system by means of heliostatic mirrors”, is a typical challenge for the studios theme. The computer controlled mirrors are currently applied in solar power plants but have not yet been integrated as a part of a buildings energy system. Besides the systems daylight contribution opens up possibilities to build denser and to redesignate existing structures. From the new context for these heliostat mirrors derive new engineering challenges.

Aspect 3: the relationship between the methodical line of approach of the studio and the method
Nowadays design sometimes has a bad aftertaste. A substance less form haste in the past has sometimes produced meaningless monuments for the architect themself. That came to a turning point as the architect now tries to increase his role in the building process and wants to be more than solely a spatial designer. The Architectural engineering studio aims at widening the scope of architecture students to find solutions for problems beyond the spatial level. The student is challenged to think about energy, sustainability, vacancy, pollution and many more issues.

The graduation is divided in two phases. The first aims at making a research paper, the second at making a design. In the first phase of the graduation “the paper” should increase the significance of the project. It is in this phase that I experienced friction between the architectural project and writing a paper. Where the paper is a linear product that tempts to convey a certain prepossessed focus, the architectural project calls for decomposing and recomposing of the storyline. The constant shifts in the architectural story caused shifts in the research aims and its content. It sometimes felt like playing chess with constant changing chess pieces and rules.

In retrospect not many of the problems I was facing in my project have been solved in words. It was only until I started to design that the real challenges came to light. The attempt to enhance the projects significance by means of a research paper to me was rather ineffective. In the end it is design that made the project to what it is. It was as if in the “paper phase” we exchanged our design terminology to scientific terminology but we still had to make architecture and therefor design. A concept became a research question, a first synthesis became a hypothesis and instead of proving our ideas in models we write stories.

In case of my project the largest part of the research I have done gave a good notion of the topic but was inapplicable for the eventual design. It is my conception that it is not mandatory to explore a topic into its finest detail before the start of a design. It is only in the process of design that the real challenges come to light. My conclusion is therefor that the research paper was no more than an ineffective version of design disguised as research.

Design as teached at TUD is a very effective way of doing research so the rigid deviation between paper and design to me is rather enigmatic.

Aspect 4: The relationship between the project and the wider social context

This paper investigates the role that heliostatic mirrors can play in the transformation of vacant office buildings. There lies a huge assignment for the transformation of vacant office buildings. Amsterdam teleport has an increasing office vacancy rate that is now 22.4%. (Amsterdam, 2011) This permanent vacancy problem calls for the transformation of these existing buildings. With finding a new purpose for these existing buildings, several problems come to light. The often deep building volumes have poor daylight access and are therefore highly dependent on artificial lighting. Besides these outdates buildings do not meet today’s energy requirements which is primarily caused by an extensive heating demand of 500 MJ/m². Second comes lighting which is responsible for an energy consumption of 260 MJ/m² (Meijer Energie & milieumanagement B.V., 2008). Together heating and lighting are responsible for respectively 40% and 22% of the energy consumption in existing office buildings.

Heliostatic mirrors are computer controlled mirrors that can focus sunlight onto a predetermined target. The possibility to bring daylight deeper into a building contributes to
better daylight access, minimizing electrical lighting, and reducing the demand for heating. And because daylight can be brought deeper into existing office buildings new spatial organisations become possible, these transformed buildings can operate differently. The main research question therefore is; "How can heliostatic mirrors play a role in the transformation of deep vacant office buildings, contribute to day lighting, heating and minimize the electrical lighting of dark spots?"

**Keywords** – Heliostatic mirrors, Heliostats, daylight optimisation, office transformation
Reflection P4 and P5 (all tracks)
At P4 and P5 a reflection must be included as a distinct part of the thesis (a separate chapter) or as a separate document.
In this reflection the student uses a short substantiated explanation to account for the results of the research and design in the graduation phase (product, process, planning).
The aim of the reflection is to look back and see if your approach worked, to understand the "how and why", and subsequently to learn from this. The choice of method (how) and argumentation (why) which preceded the research was a part of your study plan – the reflection must contain an answer to the question of how and why the approach did or did not work, and to what extent. Depending on the research and design, reflection on a number of the following aspects should be included (you may choose in which order). The reflection should be in the form of a text, with diagrams and sketches for purposes of illustration and clarification.
Aspect 1
· the relationship between research and design
Aspect 2
· the relationship between the theme of the studio and the subject/case study chosen by the student within this framework (location/object)
Aspect 3
· the relationship between the methodical line of approach of the studio and the method chosen by the student in this framework
Aspect 4
· the relationship between the project and the wider social context
Designing engineering redesignating.

Naast coherentie en mijn normale ontwerp uitgangspunten moet het werk een extra dimensie bevatten zoals het rietveld Schröderhuis, zodat het gebouw een kunstwerk ansicht word. An element of jazz

Maar hoe ziet een kunstwerk eruit dat kunst maakt

The making happens in the

A stop of learning and improving starts with a fixation of ideas

Samen met een groep studenten 24/7 architectuur maken.

The abstraction of architecture can be divided in
- scale
- domains
- layers (order)

Designing is an on-going cycle of divergent and convergent processes (expansion and contraction). It acquires a dualistic mindset that on the one hand operates with a lack of inhibitions and on the other hand excludes that what has proven not to work.

Divergent processes (experimenting) is forming incoherent ideas on different scales and domains.

A convergent process is forming a coherent web of interrelating ideas. Different sets or web of these ideas are possible and by forming these sets (integral designs) some ideas happen to be excluded. An exclusion of substantial ideas is an indication that there is a need for new order which leads to a complete shift of the web. (decomposing and recomposing)

In the hierarchy of ideas interesting things happen. In a dominant idea form is derived by its substance whereas other ideas are formed by substance acquired by form. This means that, when dealing with an existing structure, many ideas acquire their substance from form.
An architectural design consists of ideas criterias

A good design is a design that includes a great variety of ideas and criteria on many scales and domains, that together form a coherent whole.

Architecture is communicating a story. When I become a public figure I will become more aware of my communication and therefore I will make better architecture.

**Het ontwerp**

3d stad
Schaalverkleining
Creatieve industrie
Gebrek aan licht
Lack of heath
Lack of residences
Office vacancy