Graduation plan

Delft, 08-01-2014

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Studio
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Teachers: Ir. W.L.E.C. Meijers
Ir. W. Willers
Ir. F.W.A. Koopman

Explanation choice: The studio of RMIT is for me the most complete way of interpreting architecture and the built environment. Especially with the current problems in the Netherlands regarding vacant buildings, I think that the future of the architect lies in sustainable reuse of the existing building stock. I especially like how the RMIT design project is a very realistic and topical assessment, I which I can express both my creativity and practical mindset. All aspects in the design process are being considered, and I like how I am challenged to find my own fascination and focus within this broad field.

Graduation project

Product
Title: Reinventing the Octrooiraad building

Problem statement: The former office of the Octrooiraad on the Willem Witsenplein 6 in The Hague has lost its function. The building with 14.000m2 of vacant office space is no longer a valuable addition to the neighborhood. The Willem Witsenplein has become leftover space without a function.

Research question: What was and will be the new added value of the Octrooiraad building to its neighborhood?

Goal: The goal of this graduation project is to find a new purpose for the office of the Octrooiraad in The Hague. More specifically, a new function that will enhance the quality of living in the area of the Benoordenhout as well as the quality of the building itself. To achieve this, research has to be done on both the existing and desired. What defines the current quality of the building and its context? What are the desired qualities?
Process
Method description: In a design process, the different steps do not follow up each other in chronological order. The design process is an iterative process that is often circular: as the designer is working on a sketch, he discovers new elements or raises new research questions (Leupen ea, 2005). Although there are often big similarities in the approach of different designers, the design process is always a unique and personal path. As I am used to the educational system of the TU Delft, I usually stick to the general approach of a design project: starting with a broad analysis, then using this as a basis for the design phase. As this is a very simple order, it also has its limitations. I learned in the different projects that I often miss a coherence between design and analysis. For the graduation project therefore I would like to keep combining these two during the whole design project. My intentions for that are described below.

In both the analysis and the design phase, I realize that I mainly work top-down: from urban scale towards the scale level material and detail. Although never in a linear process and always interwoven with each other, I prefer to work in this order of increasing scale, zooming in on the detail.

For my graduation project, I decided to approach the process in the following way. Considering the scale levels, I would like to stick to the top-down method as I am used to, zooming in from a urban scale to the building detail. This matches well with the offered education program: working from urban masterplan towards building technology and detail. In this top-down process however, I want to ensure consistency between the different scales by introducing reflection points in the process. These points will be scheduled at every (both official and small, intermediate) presentation, since these will be the moments where my work will be most presentable and complete. After each presentation, making use of the comments of my tutors and fellow students, I will ask myself the following question:

Can my design be justified on all different scales regarding my design goals?

More specifically: What is the reason for .... regarding my design goals? Why?

In all the different scale levels, both analysis and design are very important. As described earlier, the general approach at the faculty of Architecture at the TU Delft is to start with analysis and end with design. To find out what the role of the building is in the neighborhood, analysis is a logical first step in the process. By investigating the building on different levels, such as historical development, urban context, composition, building technology, material use, the existing values of the building will be determined. This value assessment will offer a handle in the design process.

The design phase can be walked through in the evident way of increasing scale: first, a masterplan for the neighborhood, the direct urban context, then a functional program, a global floor plan, additional spaces, construction, a detailed floorplan, ending with building details and materialization. But I think this will not lead to the most consistent and complete redesign. I need a closer connection between research and design. In my opinion, a design for a building should not evolve out of the need of making something beautiful, but has to be the result of adequate research on different topics regarding the design goals. Therefore, I want to base my process on the method of design by research or, in other words, research-based design. By doing
research during the design process, my design choices will be justified in a better way and based upon researched theories and topics.

For a specific research during the design process, I would like to focus on a theme that has fascinated me during my design projects. I have always been puzzling with composition and dimension, proportion and ratio. Symmetry, geometric forms, parabolic shapes, I have used those terms more than once as a starting point for a design. Letting go of these very strict rules of composition I had set for the design turned out to be the biggest challenge, sometimes even with the result that I had forced myself into difficult puzzles regarding floor plans or construction. The handle I started with turned into a trap later in the design process. But despite of these struggles, composition and proportion have always played a leading role. On this topic, countless books and articles have been written. Two of the most famous theories are the classical ‘Golden ratio’ and the much younger theory of the ‘Plastic number’ by Dom Hans van der Laan. In order to use this fascination in future designs, in a way that it is supportive instead of obstructive, I formulated the following research question:

What is the role of the proportional rules of Dom Hans van der Laan in the composition of the Octrooiroad building in The Hague, and why should these proportions be respected and applied in the redesign?

My research on this topic will consist of three parts. First, there is the theoretical research. Secondly, I will research the theory of Van der Laan in practice: an ex post evaluation of buildings (De Jon & Van der Voordt, 2002). And finally, I will investigate how I can apply the theory in the design of my graduation project. These three steps are not necessarily consecutive, as the theoretical research and ex post evaluation can be overlapping with the design based research. More information about the research on Van der Laans plastic number can be found in my position paper (appendix 2).

**Literature/references:**

**Design based research, general:**


Chapter B: Design research and typology (Taeke de Jong ea)

Chapter F, 35: Re-design and renovation (Leo Verhoef)


**Phenomenology**


**Proportion and the plastic number:**

With this research based design, I will investigate and apply the theory of Hans van der Laan and his ‘plastic number’. As this theory is relatively young, I think it will be very interesting to see where this theoretical approach can be found back in the existing architecture, and what is has to offer for future designs. The redesign of the Octrooiraad building in The Hague will serve as a specific case to apply this theory to. With that approach, I intend to link theory and practice in architectural design and be able to found my design on research. This example could lead to a broader implementation of the theory in the design process and at the same time give momentum to the discussions on beauty, perception, proportion and design in the field of architecture.
## Appendix 1: Time planning

**Fall semester 2013 (MSc3):**

<table>
<thead>
<tr>
<th>Week</th>
<th>Main goal/question</th>
<th>Products/actions</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Week 1.1</strong>&lt;br&gt;02 september</td>
<td>Introduction Urban analysis (future) <em>What is The Hague?</em></td>
<td>Visit Sketches Literature research</td>
<td>History thesis Appointment planning? 3landentocht</td>
</tr>
<tr>
<td><strong>Week 1.2</strong>&lt;br&gt;09 september</td>
<td>Analysis</td>
<td>Maps Schemes Prepare presentation</td>
<td>History thesis Kick-off RTC Erasmusprints</td>
</tr>
<tr>
<td><strong>Week 1.3</strong>&lt;br&gt;16 september</td>
<td>Architectural analysis Presentation (17th) Hand-in concept urban Sketches</td>
<td></td>
<td>Amstelbeker Hand-in history thesis</td>
</tr>
<tr>
<td><strong>Week 1.4</strong>&lt;br&gt;23 september</td>
<td>Architectural analysis <em>What is the essence/ beauty of the building?</em></td>
<td>Drawings/schemes Literature research Visit? Prepare presentation</td>
<td></td>
</tr>
<tr>
<td><strong>Week 1.5</strong>&lt;br&gt;30 september</td>
<td>Structural analysis Presentation (01 okt)</td>
<td>Presentation (1st) Hand-in concept arch. Sketches, brainstorm personal theme/design.</td>
<td></td>
</tr>
<tr>
<td><strong>Week 1.6</strong>&lt;br&gt;7 oktober</td>
<td>Structural/BT analysis <em>What is the main theme of the material? Essence of structure?</em></td>
<td>Drawings, schemes Prepare presentation Literature research</td>
<td>28th: trainingsdag RTC</td>
</tr>
<tr>
<td><strong>Week 1.7</strong>&lt;br&gt;14 oktober</td>
<td>Presentation (15 okt) Combine scales</td>
<td>Presentation (15th) Conclusions Value assessment Hand-in concept BT</td>
<td></td>
</tr>
<tr>
<td><strong>Week 1.8</strong>&lt;br&gt;21 oktober</td>
<td>Combine scales Prepare P1</td>
<td>Schemes, poster, drawings, personal theme/focus.</td>
<td>26th: trainingsdag RTC</td>
</tr>
<tr>
<td><strong>Week 1.9</strong>&lt;br&gt;28 oktober</td>
<td>Presentation P1</td>
<td>Print poster Presentation P1 (29th) Write P1-report</td>
<td></td>
</tr>
<tr>
<td><strong>Week 1.10</strong>&lt;br&gt;4 november</td>
<td>Report</td>
<td>Hand-in P1 report Choose project</td>
<td></td>
</tr>
<tr>
<td><strong>Week 2.1</strong>&lt;br&gt;11 november</td>
<td>Master plan <em>Why? How? What?</em></td>
<td>Define borders, relations schemes, sketches.</td>
<td>Deadline P2 registration</td>
</tr>
<tr>
<td><strong>Week 2.2</strong>&lt;br&gt;18 november</td>
<td>Masterplan &gt; plans for the city/developments</td>
<td>Drawings, maps, define masterplan, program Prepare presentation</td>
<td>Selectiemoment KNRB: Hel v/h Noorden (24th)</td>
</tr>
<tr>
<td><strong>Week 2.3</strong>&lt;br&gt;25 november</td>
<td>Masterplan</td>
<td>Present masterplan Thesis plan individual</td>
<td>30th: trainingsdag RTC / (trainingskamp KNRB)</td>
</tr>
<tr>
<td><strong>Week 2.4</strong>&lt;br&gt;02 december</td>
<td>Masterplan</td>
<td>Finalise masterplan Define starting points Workshop program</td>
<td>Sinterklaas KNRB: NK Indoor (7th) Subscribe courses</td>
</tr>
<tr>
<td><strong>Week 2.5</strong>&lt;br&gt;09 december</td>
<td>Research by design / design by research</td>
<td>Sketches, schemes, drawings. Research v/d Laan</td>
<td>Position paper final</td>
</tr>
<tr>
<td><strong>Week 2.6</strong>&lt;br&gt;16 december</td>
<td>Research by design / design by research</td>
<td>Sketches, schemes, drawings. Design focus/proposal</td>
<td>Kersttest RTC</td>
</tr>
<tr>
<td><strong>Christmas holidays</strong>&lt;br&gt;23 dec – 4 jan:</td>
<td></td>
<td>wintersport werken Solneige</td>
<td></td>
</tr>
<tr>
<td><strong>Week 2.7</strong>&lt;br&gt;6 january</td>
<td>Research by design / design by research</td>
<td>Define design proposal Drawings, maps, prepare presentation, model</td>
<td></td>
</tr>
<tr>
<td><strong>Week 2.8</strong>&lt;br&gt;13 january</td>
<td>Presentation P2 1:200/1:100</td>
<td>Presentation P2 (13/14th)</td>
<td></td>
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<tr>
<td><strong>Week 2.9</strong>&lt;br&gt;20 january</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Week 2.10</strong>&lt;br&gt;27 january</td>
<td>(Retake P2)</td>
<td>(prepare retake) (Presentation)</td>
<td></td>
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</table>
Spring semester 2014:

Bouwkunde: research on theory v/d Laan, read more books, some tutoring (in consultation with tutors) extra courses (Ornametics, ...)

Roeien: Trainingskamp Sevilla 01-16 februari.
Vanaf maart elke twee weken wedstrijdweekend Amsterdam/Rotterdam/Essen/Gent/....
Evt trainingsstages KNRB.
NK eind april > definitief selectiemoment
(KHB half juni)
(WK Amsterdam > half augustus)

Fall semester 2014 (Msc4):

<table>
<thead>
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<th>Week</th>
<th>Main goal/question</th>
<th>Products/actions</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1.1 01 september</td>
<td>Introduction</td>
<td>Redefine design borders/questions</td>
<td></td>
</tr>
<tr>
<td>Week 1.2 08 september</td>
<td>Design – urban / social</td>
<td>Research urban proportion, sketches</td>
<td></td>
</tr>
<tr>
<td>Week 1.3 15 september</td>
<td>Design – urban / architectural</td>
<td>Research proportions building</td>
<td></td>
</tr>
<tr>
<td>Week 1.4 22 september</td>
<td>Design – architectural / structure</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 1.5 29 september</td>
<td>Design – architectural / structure</td>
<td>Research proportions redesign</td>
<td></td>
</tr>
<tr>
<td>Week 1.6 6 oktober</td>
<td>Design – architectural / structure</td>
<td>Prepare P3</td>
<td></td>
</tr>
<tr>
<td>Week 1.7 13 oktober</td>
<td>Design – architectural / technical / detailing</td>
<td>P3 Presentation</td>
<td>Trainingskamp rond deze week</td>
</tr>
<tr>
<td>Week 1.8 20 oktober</td>
<td>Design – architectural / technical / detailing</td>
<td>Research proportion in materialization/detailing</td>
<td></td>
</tr>
<tr>
<td>Week 1.9 27 oktober</td>
<td>Design – architectural / detailing / interior</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Week 1.10 3 november</td>
<td>Design – detail / interior</td>
<td>Start with final drawings 7th : final application date P4</td>
<td></td>
</tr>
<tr>
<td>Week 2.1 10 november</td>
<td>Drawings</td>
<td>Drawings, CAD</td>
<td>Trainingskamp rond deze week</td>
</tr>
<tr>
<td>Week 2.2 17 november</td>
<td>Presentation</td>
<td>Drawings, photoshop, schemes, poster</td>
<td></td>
</tr>
<tr>
<td>Week 2.3 24 november</td>
<td>Presentation</td>
<td>Final touch presentation poster, start with model</td>
<td></td>
</tr>
<tr>
<td>Week 2.4 01 december</td>
<td>Model(s)</td>
<td>Prepare presentation: model(s)</td>
<td></td>
</tr>
<tr>
<td>Week 2.5 08 december</td>
<td>Presentation P4</td>
<td>Presentation P4</td>
<td></td>
</tr>
<tr>
<td>Week 2.6 15 december</td>
<td>Prepare P5</td>
<td>Improve drawings / poster / model</td>
<td></td>
</tr>
<tr>
<td>Christmas holidays</td>
<td>Wintersport</td>
<td>Prepare P5</td>
<td>werken Solneige</td>
</tr>
<tr>
<td>Week 2.7 5 january</td>
<td>Prepare P5</td>
<td>Improve poster / model</td>
<td></td>
</tr>
<tr>
<td>Week 2.8 12 january</td>
<td>Prepare P5</td>
<td>Improve poster / model Prepare presentation / graduation</td>
<td></td>
</tr>
<tr>
<td>Week 2.9 19 january</td>
<td>P5</td>
<td>Presentation P5</td>
<td></td>
</tr>
<tr>
<td>Week 2.10 26 january</td>
<td>(Presentation P5)</td>
<td></td>
<td></td>
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</tbody>
</table>
Appendix 2: Position Paper

A proportional redesign
Transforming the Octrooiraad office according to the theory of Dom Hans van der Laan

AR3A160 Lectures Series Research Methods
Yvonne Janse, 1521284 12 December 2013

Introduction

What is my point of view in the field of architecture? I am only just starting to understand the complexity of architecture and the built environment. The connection of a building with its context is for me a very fascinating and challenging part of architecture. How does a building blend in or stand out? What does a new building or transformation add or change to the direct urban context? Besides this broad subject, there is one aspect that has my special interest. Studying on different projects during my education at the TU Delft, I have always been puzzling with composition and dimension, proportion and ratio. Symmetry, geometric forms, parabolic shapes, I have used those terms more than once as a starting point for a design. Letting go of these very strict rules of composition I had set for the design turned out to be the biggest challenge, sometimes even with the result that I had forced myself into difficult puzzles regarding floor plans or construction. The handle I started with turned into a trap later in the design process. But despite of these struggles, composition and proportion have always played a leading role. But what are the rules of proportion in architecture? On this topic, countless books and articles have been written. Two of the most famous theories are the classical ‘Golden ratio’ and the much younger theory of the ‘Plastic number’ by Dom Hans van der Laan. Van der Laan was one of the leading figures of the traditionalist Bossche School, but he formulated the proportional rules not only for this style, as he thought the rules are applicable universally. He states we do not experience the specific measurements of a building element, but the ratio between the different elements. The interaction between form, space and size is essential in our perception of architecture (Huijbregtsen, 2013).

For my graduation project I will be transforming the former office of the Octrooiraad in The Hague, a traditionalist building of the Nieuwe Haagse School style. The composition of the building, specifically the contrast between the horizontal and vertical elements, and the proportions between the different volumes, are in my opinion a very strong feature of the building. I am interested to see if the proportional rules of Van der Laan are applied in the existing building of the Octrooiraad and in the relation to the surroundings, although the building was constructed decades before the theory of Van der Laan was published. Besides that, I also want to investigate if his theory is applicable on the redesign. I therefore formulated the following research question:

What is the role of the proportional rules of Dom Hans van der Laan in the composition of the Octrooiraad building in The Hague, and why should these proportions be respected and applied in the redesign?

For the answer on this question, I first have to research the theory of Van der Laan, after which I will investigate the proportions in the composition of the Octrooiraad building and other buildings. Then, in the phase of the redesign, I can found my design steps on this research. The research and application of Van der Laans rules of proportion will be a theoretical guidance in my graduation project.

In this position paper, I will first introduce the theory of Van der Laan. In the chapter Position describe my position on this topic, followed by the intentions of my research and the methods and episteme that I will be using, in the chapter Research methods.
A short introduction on proportional rules

The golden ratio

Architects, together with painters, sculptors and other artists, have been searching for a way to capture beauty in their work since the ancient times. Although beauty is often seen as a subjective quality, the classical artists already relied on a very clear rule that has proved its effectiveness in nature as well as art and architecture: the golden ratio. The ratio is based on the principle that the smallest of two lengths is related to the biggest as the biggest is related to the sum of the two lengths (Kruijtzer, 1998). In formula:

\[ a : b = b : (a + b) \]

\[ \phi = \frac{1 + \sqrt{5}}{2} = 1.61803... \]

The golden ratio has a close connection to the Fibonacci number. In the Fibonacci sequence each number is the sum of the previous two, starting with 0 and 1, then 1, 2, 3, 5, 8, 13 and so on. The ratio between two successive numbers approximates the golden ratio of 1.61803... From the Greek temples to the work of Le Corbusier, the golden ratio has been a valuable tool for architects (De Jonge, 1998).

The plastic number

Often confused with the golden ratio is the plastic number, introduced by Dom Hans van der Laan (1904-1991), a Dutch monk and architect (Van der Laan Foundation, 2013). In his books Het plastische getal and De architectonische ruimte, Van der Laan searches for a rule to understand proportion and order. The experience of shapes and spaces is based on an abstract dimension, but with a concrete proportion or interrelationship. Van der Laan describes a detailed search for this proportion, a tolerance between different sizes of the same order of magnitude. He states that the difference between two types has to be more than the size of the smallest type. On this point, he distinguishes his system from the golden ratio that is based on the Fibonacci sequence. The formula for the plastic number can be described as:

\[ A(n) = A(n-2) + A(n-3) \text{ for } n > 2 \]

This corresponds with the Pavodan sequence: (0,) 1, 1, 1, 2, 2, 3, 4, 5, 7, 9, 12, 16 and so on.

Van der Laan writes that the difference between the systems is the difference in direction: as the golden ratio works on the two-dimensional surface, the plastic number works for the three-dimensional shape (Van der Laan, 1977).
Van der Laan eventually formulates a *complete system of eight measures*, shown in the picture above. The smallest element has a maximum reach of comparison with the 8th element (*the big whole*) and they have a ratio of $1/7$. Converting this system to the three-dimensional, Van der Laan created a toolbox of architectural elements with varying height, width and depth, called *thematismos* (figure 5). These elements can be found back in every part of his constructed work, like the monastery in Vaals (de Haan & Haagsma, 2010).

Concluding this short introduction, we can see that Van der Laan wrote a theory for three-dimensional proportions in architecture, based on the ancient golden ratio. Whereas the golden ratio is limited to the two-dimensional surface, Van der Laan developed his theory especially for the three-dimensional architecture. Using this ratio in a three dimensional design can lead to a well-proportioned, balanced architecture, as we can see in the few constructed works of Van der Laan.

Figure 5: the complete system of eight measures and below the thematismos (Van der Laan, 1977)
Position

Hans van der Laans theory implies that beauty in architecture is measurable and manufacturable. This touches a far bigger topic in architecture and art: beauty as a design goal. Some say that beauty is something personal, subjective. Rietveld criticized the idea that aesthetics could be the foundation of architecture, stating that aesthetics can only be used as a reflection on architecture (De Jonge, 1998). Buckminster Fuller said: “when I am working on a problem, I never think about beauty but when I have finished, if the solution is not beautiful, I know it is wrong.” (Darling, 2004). Hans van der Laan had a different point of view: he was convinced that beauty could be achieved by using the right proportions. However, he stated that the system of measures itself does not make a good, beautiful building, just like it takes more than a proper musical scale to compose a masterpiece (Bureau van der Laan, 2013).

I think that beauty in architecture depends on more than what meets the eye. The users of a building will have a different perspective than a passer-by, since they will experience all the good and bad aspects of the building, such as noise, drafts, view, and therefore appreciate it in a complete different way. But if we look at the ancient Greek temples, that are generally accepted as beautiful, I think that beauty is indeed feasible in architecture, and that proportion plays a very important role in that perception of beauty. The theory of Hans van der Laan fascinates me as it is in line with my thoughts and fascination on proportions in designing. A building is always related to its surroundings, as all the volumes are interrelated, and all the building parts have a proportional relation. Whereas a good inner climate is easily tested, the visual beauty of a building is harder to examine. The theory of Hans van der Laan can be a valuable tool for this, both in the design phase as in the evaluation of a building. But, as stated above, a good tool does not automatically generate a good building. As I will try to use the plastic number in my redesign, I have to be aware that architecture is more than sculpting a building mass. Although the ratio will help me proportion and evaluate the building mass, there are numerous other factors that have to be considered in a design process. A well-proportioned composition does not guarantee a proper routing or inner climate. Unlike my previous projects where I struggled with proportion, this research and theory has to play a guiding instead of a dictating role.

Research method

My research on this topic will consist of three parts. First, there is the theoretical research. Secondly, I will research the theory of Van der Laan in practice: an ex post evaluation of buildings (De Jon & Van der Voordt, 2002). And finally, I will investigate how I can apply the theory in the design of my graduation project. These three steps are not necessarily consecutive, as the theoretical research and ex post evaluation can be overlapping with the design based research.

Theoretical research

The body of thought of Hans van der Laan is placed central in this research. His own work, Het plastische getal and De architectonische ruimte will be the main sources, but also books about his work and ideas, like the books and articles of Alberto Ferlenga, will be studied, as well as the interactive website of the Van der Laan Foundation. As mentioned on the website of the Van der Laan Foundation, Hans van der Laan was very inspired by the book of H.P. Berlage: Schoonheid in samenleving (Van der Laan Stichting, 2013). I think it will be a very useful read as it will give me understanding of van der Laans ideas. Next to this, the research on the plastic number can be placed in a larger context: the perception of beauty in architecture. This theme can be placed within the episteme of phenomenology. The book of Derk de Jonge, Mooi is anders, is a very good introduction to this very broad topic. In Ways to study and research, Taeke de Jong writes about mathematical models and the plastic number. Also Steven Holl is known for his writing on the topic of perception of architecture: in Questions of perception: phenomenology in architecture, he writes about an architecture of the senses, in which the eye is the sense of separation and distance. “Great architecture offers shapes and surfaces molded for the pleasurable touch of the eye” (Holl, 2008).
Ex post evaluation of buildings

The second part is based on the analysis of existing buildings and the importance of Van der Laans plastic number in their composition. As a reference, I will look at the monastery in Vaals by Hans van der Laan (de Haan & Haagsma, 2010) and the work of the Dutch office HP architecten, applying the plastic number in all their designs (de Haan, 2004). But as these designs are based very strictly on the ratio, I am particularly interested to see if and where I can find these proportional rules back in buildings before the theory was published. Therefore I will investigate the presence of the plastic number in the building of the Octrooriaad, on the Willem Witsenplein 6 in The Hague. For my graduation project, I will be redesigning this vacant office, built in the 1930’s. In the composition of the building mass, the architect uses different volumes that are pushed into each other. In the analysis, the transformation of the building in the 50’s, adding two floors to the building and changing the composition, will be considered as well. Secondly, the relation between the building and the surrounding housing blocks will be analyzed in the same way.

A proportional redesign

This theoretical research and evaluation will be the foundation for my redesign. From the conclusions of the evaluation of the office, I will be able to define the strong and weak points in the composition of the building. What current proportions are valuable in the relation to the surroundings and should be maintained? What points could use a more distinct composition? In the design phase, I can use this information as a part of my value assessment. Besides this reflection of the existing, the new function of the building will ask for a transformation of the building. When demolishing, adding or altering volumes, I will use the theory of Van der Laan as a basis. But to answer the design research question: Why should the proportions be respected and applied in the redesign? I need a tool to reflect upon the different design proposals. By making mass models, I will be able to critically evaluate the different options. Not only the composition of the building itself, but also the proportion between old and new, and the relation towards the surroundings will play an important role in this mass study. In the evaluation of the different mass models, the application of plastic number will be the main issue. But as stated in the chapter Position, I think a good (re)design needs more than beauty alone. If a composition that is desirable according to Van der Laans theory does not match with the demands in terms of function, construction, building climate, routing and so on, there is a conflict in the design. I will then be my task as a designer to make decisions that are well substantiated regarding the design as a whole, not only as a sculpture. The theory will thus be of valuable help in the composition of the redesign, but should never become a dominant, fixed rule.

Figure 6: example analysis of the south façade Octrooriaad building (Own work)
Conclusion

My fascination for proportion, ratio, has both helped and work against me in previous designs. To make sure I can use this fascination as a chance instead of a trap, I will be studying on the theory of the plastic number by Dom Hans van der Laan. I am interested if this theory is applicable to the building that I will be using for the redesign project of my graduation studio. My research method consists of three steps: theoretical research, ex post evaluation and design based research. In the theoretical research, I will study upon the theory of Hans van der Laan and place his body of thought in the larger context of beauty in architecture. Besides this literature study, I will evaluate several buildings that are aware or unaware designed according to the plastic number. The main topic here will be the evaluation of the mass composition of the Octrooiraad building. This evaluation of the building for my graduation project will offer me a value assessment that will be essential in the design phase. Eventually, in the design phase, the research on the plastic number will be leading in the mass composition of the building, offering me a potential toolbox and measure system for the transformation of the building. By comparing different mass models, I will be able to evaluate the relevance of the plastic number in my redesign. The episteme of phenomenology, how we perceive architecture, and in this case the visual perception, will be leading in this design based research. But as the design will not only be evaluated on visual perception, I will use the theory of Hans van der Laan as a supportive system, as the theory should never play a dictating role in the practice of designing. Studying on the plastic number of Hans van der Laan can guide me towards a proportional redesign.

Literature


