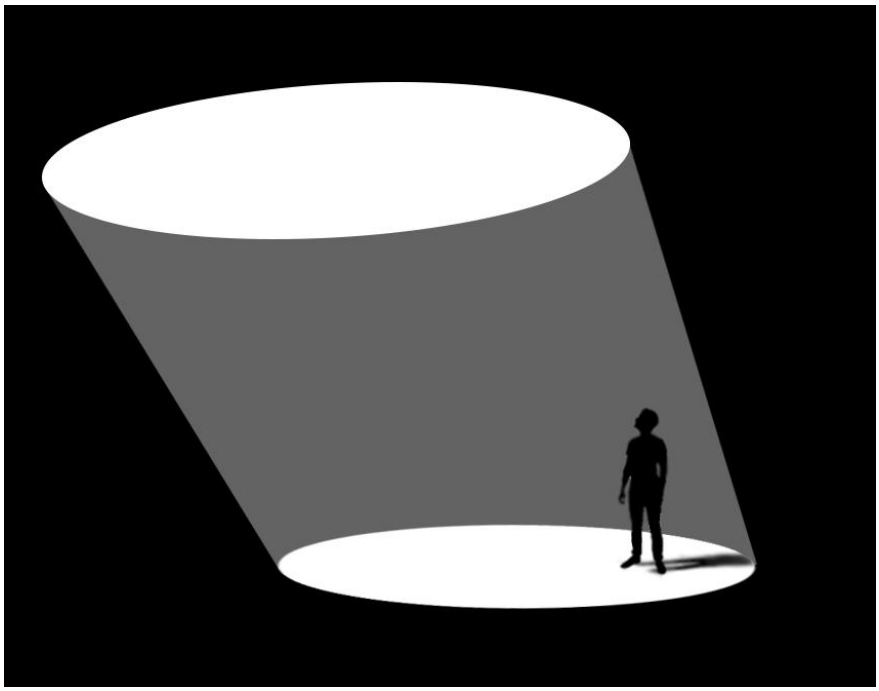
PHENOMENOLOGY IN ARCHITECTURE

Defining experiential parameters



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I INTRODUCTION

In every project that is being designed, a lot of time and energy is being invested. For every project has a custom set of circumstances and requirements that need to be considered. These circumstances and requirements can vary in terms of budget, location, program, people, climatic design, materials, esthetics, sustainability and more. It is therefore imperative to have a valid understanding, not only of the project specific circumstances and requirements but of architecture and its underlying research in a broader sense. For every project is a prototype it is important to learn and reflect upon it. Theoretical research is therefore crucial to come to a proper understanding of architecture, for without it we would be creating no more than Hollywood facades.

To create this understanding and doing research it is important to determine a clear methodology to broaden your view and get a clear scope of the research. Which then will lead to a better understanding of the subject, it's research question and what methods can and should be used. For this self-assessment on research method(ologies)s this paper focuses on exploring the relation between phenomenology and parametric design.

From a basic point of view phenomenology is the study of lived experiences from a subjective or first-person view. It is about the understanding of the phenomena that arise from the conscious experience of being in this world, where the thought of a lived experience plays a defining role[1]. Several architects have made valid arguments for a phenomenological approach towards the understanding of architecture. Yet the overall subjective nature of phenomenology has limited it to be used as an explicit method in designing.

Alongside this development the use of parametric modeling has become a widespread tool. Parametric modeling is a computer-aided design tool where algorithms, based on a set of conditions, parameters, define the relation between elements of geometry. The tool links the 'design intent' and the 'design response' of what a designer wants to achieve[2,3], whereby the end product is not only the result of the designer's imagination, but also of his capabilities of the rules and parameters that he set up[4]. With parametric modeling the algorithmic relation between multiple elements of geometry can relatively simply be changed, and thereby it is possible to create a range of design solutions. Within architecture and urban design this way of designing has already proved its worth; from calculating the energy efficiency to structural integrity of complex geometry; from challenging functional and spatial relations to management related issues[5,6]. While parametric modeling is used in diverse fields of work, the designs produced in the field of architecture is strongly defined by a stylistic formal language. These stylistic design solutions each give a 'out-of-the-box' sensory experience, but what if a designer wants to construct a specific sensory experience? This would require the designer to make explicit what the designer has always worked with in an unspoken way. The research question for this thesis is therefore; how can a designer define experiential parameters?

II RESEARCH-METHODOLOGICAL DISCUSSION

The previously defined research question is being approach from a phenomenological angle due to architecture's direct relation with experience. For the experience of architecture is something that doesn't manifest in architecture but in the mind of the perceiver. Studying the phenomena of how the human consciousness sees and interprets the outside world can lead to a better understanding of how this can lead to a clear design intent and a set of corresponding experiential parameters.

The approach towards the research question starts with a literature review, creating a base of knowledge of what is already known, a preunderstanding, and then be revised and expanded with new research. The theories of Norberg-Schulz and Merleau-Ponty will be used to create an understanding of the phenomenology of architecture. While the literature written by Bryan Lawson and Gernot Bohme are providing a secondary source for theoretical knowledge. To bridge the gap between the theoretical and the practical a case study will be used. For this case study a phenomenological description needs to be made. By defining sensory elements of architecture. Observing and reflecting carefully upon a specific location to crystalize an experience. A crystallization that goes beyond that of a mere visual description. Using a combination of photographic, recorded and written statements. Defining experiential parameters that can be used as a foundation for a parametric design. Refining the descriptions into conceptual sketches and possible models that loop back into a parametric model.

One has to wonder if simplifying the complexity, diversity and deep-rooted subjectivity of phenomena can be reduced to that of just a set of parameters, which from the very nature seem to contradict each other. Tadao Ando, a Japanese architect, states that the real job of architecture is to distill the atmosphere of a place through a logical set of rules. Abstracting the contradictions and complexities of the material world[7]. This delicate way of abstraction can intensify and crystalize the raw or unfiltered world[8]. In some way parametric modeling relates a lot to the conventional way of designing. Where one starts off with a given program and conditions, the parameters, that are then analyzed and defined, reflected upon, redefined and eventually woven into a design.

However, if the program and its conditions are interpreted incorrectly, the resulting solutions will lack in providing a correct answer to the design problem. Besides a higher degree of difficulty in the conceptual phase of the design, the most defining difference with parametric modeling lies in the explicit way of thinking that is required to set it up. Something a more conventional designer does in an unspoken way.

III RESEARCH-METHODOLOGICAL REFLECTION

Phenomenology is, from a basic point of view, the study of lived experiences from a subjective or first-person view. It is about the understanding of the phenomena that arise from the conscious experience of being in this world. Trying to create an understanding of this is something that mankind has been doing for quite some centuries. As many great philosophers, such as Descartes, Kant or Hume, were defining various states of perception, imagination and thought, they were basically performing phenomenology. It wasn't until the early 20th century that Edmund Husserl defined the discipline of phenomenology. This was continued in development by several philosophers, leading up to a total of seven traditional approaches of phenomenology which have been published in the *Encyclopedia of Phenomenology* (1997). The works of Husserl, Heidegger, Merleau-Ponty and Satre are seen as the most important ones. Each of them having a different concept of phenomenology, methods and results. In *Being and Time* (1927), Heidegger continues to build upon Husserl's work. By adding semiconscious and unconscious mental activities, that connect to practical and embedded activities within the mind, such as hammering a nail, speaking or dwelling. In that sense Heidegger's continuation of phenomenology had a more poetic approach and broadened the scope of phenomenology.

Within the field of architecture, the discipline of phenomenology has contributed significantly to it due to architecture's direct relation with experience. The theoretical debate and importance of phenomenology within architecture has been continued by architects and philosophers during the second half of the 20th century. While those in favor of phenomenology seem to focus on the creation of architecture that speaks to the mind with more than just the visual. This process of creation is a relatively slow process. The architect needs to adjust and engage in a world that physically and culturally changes rapidly. To incorporate the zeitgeist into the design is to capture the moment, accelerate with the changes and be flexible, while trying to grasp (if even possible) the genius loci is a slow process. Pallasmaa states in his book that '*Instead of participating in the process of further speeding up the experience of the world, architecture has to slow down experience, halt time, and defend the natural slowness and diversity of experience. Architecture must defend us against excessive exposure, noise and communication*.'[9], while Koolhaas states the following: '*Any architectural project we do takes at least four or five years, so increasingly there is a discrepancy between the acceleration of culture and the continuing slowness of architecture*.' Both architects have a different viewpoint on how the experience of architecture needs and can relate to the outside world[10].

The increased use of parametric modeling has also led to much research and how it can be applied within architecture. Within the construction world researchers have studied on integrating building information (BIM) and include design intent to advance production and construction[11]. The parametrization of design intent requires a clearly defined description and classification of qualitative elements before setting up a parametric model[12]. Studies within the discipline of computational design have determined that the psychological load during the conceptual phase increases when setting up a parametric model[13]. Some propose to classify algorithms by their design patterns to clarify and speed up the parametric design process. According to Sanguinetti & Kraus (2011) one thing has become clear, designers within the field of architecture need to change their way of thinking in order to engage in parametric design[14].

IV POSITIONING

One issue addressed within spatial narratives was the issue about the aestheticization of architecture. For decades architects have created iconic buildings, emphasizing the visual but neglecting the other senses of the human body. With the rapid digitalization of the world, large quantity of images is made available. Klaske Havik, associate professor of Architecture of Methods & Analysis at the Technical University in Delft, expresses her concerns as well; '*… in our age of fast digitalized information and search media, students have ceased to read classical literature and poetry, […] As a consequence, architecture atrophies into formalism and shallow aestheticization*.'[15] It is this issue that several architects and philosophers try to address by using the principles of phenomenology as a guideline towards creating architecture. In phenomenology the world is perceived through the human body. The design should stimulate also non-visual senses, consciously and subconsciously. Where the architecture produced is not the reflection of the architect's self-interest onto the people, but a genuinely contextually correct experience.

With the increased use of parametric modeling the ease of producing and exploring multiple design solutions has become a lot easier. These design alternatives are however based on a set of conditions, parameters, that define the outcome. If these parameters are interpreted incorrectly, the resulting solutions will lack in providing an integrated design. Making design intent explicit is difficult due to the subjective nature of phenomenology. According to Sanguinetti & Kraus, of the University of Kansas, the parameters within a script can be divided into two types that represent the designer's intention; experiential parameters that describe the diversity of a parametric design and model parameters, used to describe the range and limits of the geometry. They state that by overlapping experiential parameters that there will be a possibility of something that represents a sensory experience, including *'…auditory, haptic, olfactory, visual, skeletal/muscular, kinesthetic, and temporal parameters'*[16]. In order to describe and define these parameters, it is essential to understand how the world is being perceived. According to Dana Pop, researcher at the Technical University of Cluj-Napoca, the cognitive structures influences the perception of a person (figure 1). Memory, reason, thought and imagination influence the selective ability of perception. Being aware of this when abstracting a phenomenon helps in identifying the sensory aspects of architecture that the majority of the people experience.

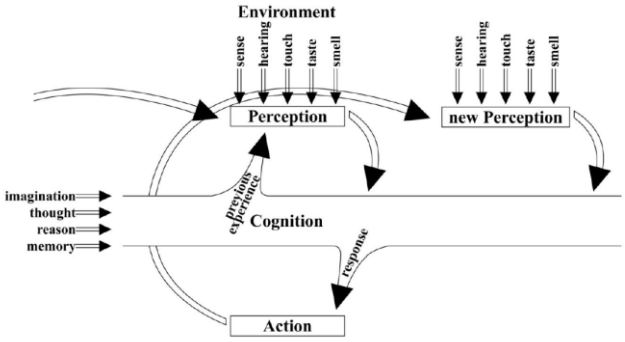

Figure 1. The relationship between perception and cognition. Copied from Space Perception and Its Implication in Architectural Design. Copyright 2013 by Pop. D.

In *Thinking in Parametric Phenomenology*, they propose the following method (figure 2) on parametrically designing with an architectural experience as the starting point:

1) Creating a phenomenological description, based on an architectural experience.
2) Reducing the descriptions into abstract sketches or models
3) Translate these sketches/models into a script with experiential parameters
4) Building a proof of concept. Fabricating an operational and responsive installation, a parametric interface.

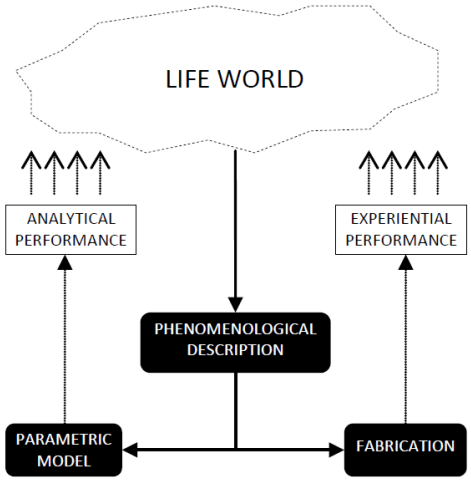

Figure 2. Parametric Interface process diagram. Copied from Thinking in Parametric Phenomenology. Copyright 2011 by Sanquinetti, P. & Kraus, C.

How can a designer define experiential parameters? By crystalizing an experience into a phenomenological description, distilling it to its core and then building up towards a parametric model. An example that was provided in a study is included below (figure 3). In this example someone walks down a spiraling staircase enclosed by stone. The kinesthetic aspect of going round and round is being identified as a possible experiential parameter. This aspect is then translated into sketches. Based on those sketches a parametric model was made that consists of a couple of concentric slatted panels that rotate around a center point, representing the kinesthetic aspect.

By using this method, the gap between talking about phenomenology and actually applying it seems to be bridged. Experiential parameters have then been identified and a design intent formed. Thereby adding another well-formed layer within the scripting process and another way of sketching the start of a design. In doing so it also addresses the shallow aestheticization or stylistic approach of (some) parametric design solutions. The position I therefore adopt is one with a stronger emphasis on a design intent based on creating an architectural experience. One that is made more explicit during the initial stages of the conceptual phase. Which is also a slight critique on the general approach of the studio I'm currently following.

The Robotic Building studio, which is part of the Architectural Engineering chair seems to favor a research by design approach. Where there is an emphasis on a high degree of customization, creating non-standard architecture. Guided by performances, mostly in terms of climatic, functional or human measurements. Going through all the micro, meso and macro scales trying to conceive an integrated design. While designing on these very practical performances works, it does however lack in my opinion in explicitly defining a phenomenological design intent. Thereby missing an opportunity to further enrich a possible design.

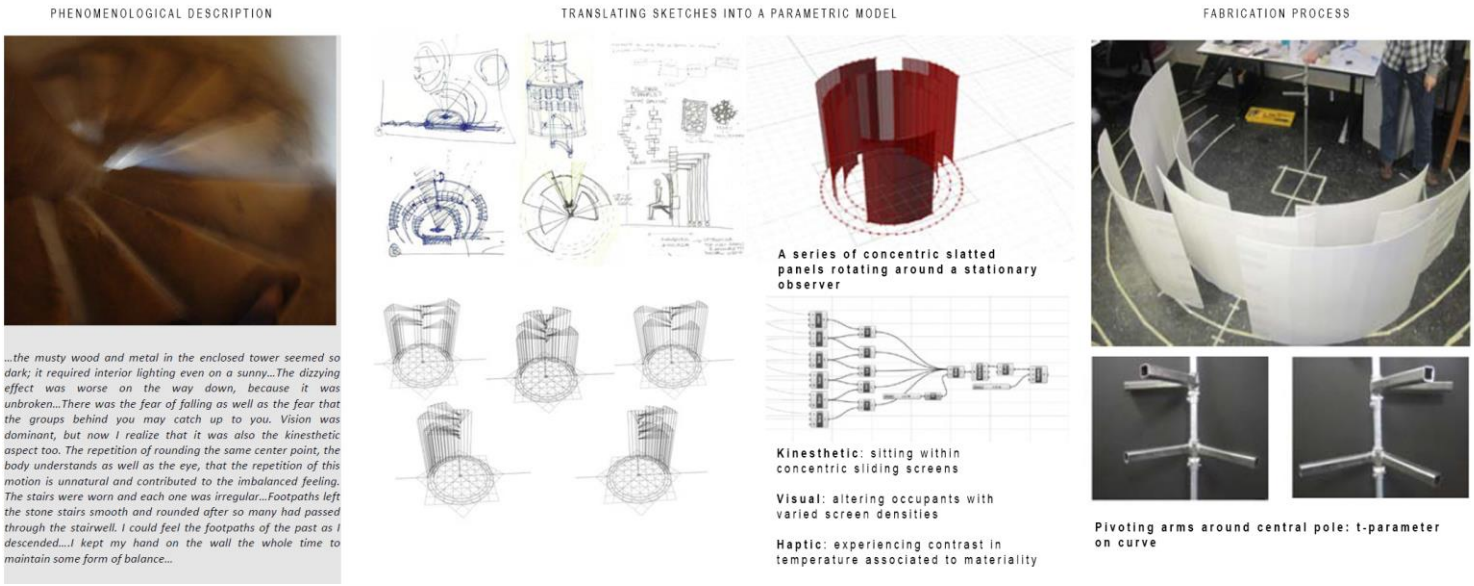

Figure 3. Samples from a phenomenological description. Translating sketches into a parametric model. Fabrication process. Copied and modified from Thinking in Parametric Phenomenology. Copyright 2011 by Sanquinetti, P. & Kraus, C.

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FIGURES

Figure 1 Pop, D. (2013). The relationship between perception and cognition [image]. Copied from Space Perception and Its Implication in Architectural Design. Copyright 2013 by Pop. D.

Figure 2 Sanquinetti, P. & Kraus, C. (2011) Parametric Interface process diagram [image]. Copied from Thinking in Parametric Phenomenology. Copyright 2011 by Sanquinetti, P. & Kraus, C.

Figure 3 Sanquinetti, P. & Kraus, C. (2011) Samples from a phenomenological description. Translating sketches into a parametric model. Fabrication process [images modified]. Copied from Thinking in Parametric Phenomenology. Copyright 2011 by Sanquinetti, P. & Kraus, C.