

# Zvi Hecker: Drawing on Drawing

Hande Asar<sup>1\*</sup>, Carolin Stapenhorst<sup>2</sup>

<sup>1</sup>Department of Architecture, Istanbul Technical University, Istanbul, Turkey

<sup>2</sup>Faculty of Architecture and Urban Planning, Erfurt University of Applied Sciences, Erfurt, Germany

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## Abstract

**Background** Architectural representation, nurtured by the interaction between design thinking and design action, is inherently multi-layered. However, the representation object cannot always reflect these layers. Therefore, it is claimed that these reflections and layerings can gain visibility through ‘performativity in personal knowledge’, which basically has a performative character. The specific layers of representation produced during the performativity in personal knowledge permit insights about the ‘personal way of designing’ [1]. Therefore, the question, ‘how can these layered drawings be decomposed to understand the personal way of designing’, can be defined as the beginning of the study. On the other hand, performativity in personal knowledge in architectural design is handled through the relationship between explicit and tacit knowledge and representational and non-representational theory. To discuss the practical dimension of these theoretical relations, Zvi Hecker's drawing of the Heinz-Galinski-School is examined as an example. The study aims to understand the relationships between the layers by decomposing a layered drawing analytically in order to exemplify personal ways of designing.

**Methods** The study is based on qualitative research methodologies. First, a model has been formed through theoretical readings to discuss the performativity in personal knowledge. This model is used to understand the layered representations and to research the personal way of designing. Thus, one drawing of Hecker's Heinz-Galinski-School project is chosen. Second, its layers are decomposed to detect and analyze diverse objects, which hint to different types of design tools and their application. Third, Zvi Hecker's statements of the design process are explained through the interview data [2] and other sources. The obtained data are compared with each other.

**Results** By decomposing the drawing, eleven layers are defined. These layers are used to understand the relation between the design idea and its representation. They can also be thought of as a reading system. In other words, a method to discuss Hecker's performativity in personal knowledge is developed. Furthermore, the layers and their interconnections are described in relation to Zvi Hecker's personal way of designing.

**Conclusions** It can be said that layered representations, which are associated with the multi-layered structure of performativity in personal knowledge, form the personal way of designing.

**Keywords** Architectural Design, Architectural layered Representation, Personal Way of Designing, Performativity in Personal Knowledge

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\*Corresponding author: Hande Asar ([handeasar@gmail.com](mailto:handeasar@gmail.com))

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## 1. Introduction

The relation between design thinking and design action gains visibility within representation. This relation is triggered by many factors such as experience, perception, knowledge, intuition, etc. But on the other hand, representation has its “own rules, ... limitations” (Gänshirt, 2007, p. 81). This argument has taken part as a reductionist attitude in the conventional representation approach. But in the context of architectural design, both thinking and action have a multi-layered structure. The way this structure is discussed varies for each designer. For example, one of these different variations in representation can be the accumulation of multiple relationships.

In this study, representations that are produced through the accumulation of multiple relationships are called *layered representations*. “There is no direct definition for these types of representations. But they have a dynamic structure that exhibits performatively different layers of knowledge and their relationships, produced in-action, and grasped by the resolution of this moment of action” [3] (Asar & Dursun Çebi, 2018, p. 119). It is claimed that layered representations, which also include the potential to make the dynamic structure of the design process visible, are related to performativity in personal knowledge which is related to personal approaches. On the other hand, the performativity in personal knowledge (in the context of thinking-action relationship) is related to knowledge and representation oriented theories. While explicit and tacit knowledge theories are linked to design thinking, representational and non-representational theories are linked to the design action.

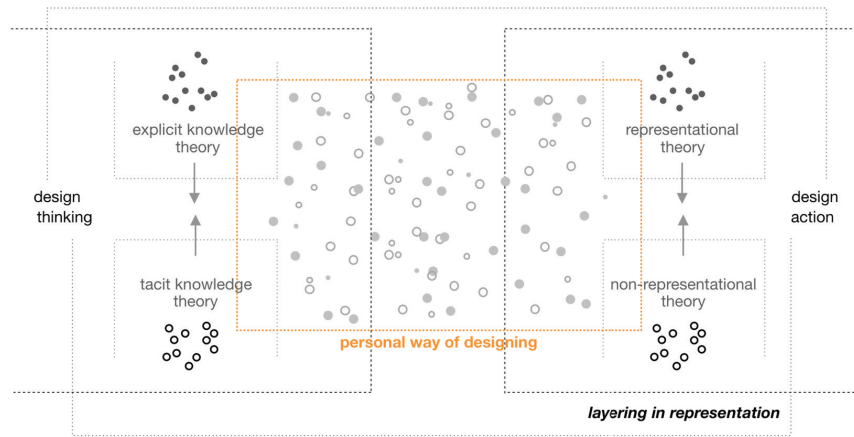
In sum, these theoretical relations generate both the layered representations and the performativity in personal knowledge. This creates the ‘personal way of designing’. Therefore, the study aims to decompose the layered drawings and to make personal ways of designing visible.

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## 2. Theoretical framework of layering in representation

Theoretical approaches that are used in this paper are not directly related to architectural knowledge but rather related to cultural, social, and cognitive disciplines. This corresponds to a common approach to architectural design research, namely that “research is conducted from an architectural approach to knowledge, but overlaps with traditional research disciplines, their theories and methods.” (Stapenhorst & Meerbach, 2019, p. 87) And just like architectural research, architectural design has always been a practice that has to deal with an interdisciplinary field of requirements and at the same time has the freedom to make use of their methods in order to personalize its own design processes. (Stapenhorst, 2016, p. 45). Those “borrowed” approaches from non-architectural disciplines allow for a high degree of personalization of the design process and can therefore be seen as an important design tool.

To frame the theoretical relations, design thinking is discussed through explicit and tacit knowledge theories, and design action is discussed through representational theory and non-representation theory. It is claimed that layering in architectural representation is composed by performative relationship established between all these theoretical approaches and that this relation accomplishes the performativity in personal knowledge (Figure 1).



**Figure 1** Theoretical framework and relations (H. Asar, 2020).

In design thinking, explicit knowledge theory has been associated with ‘know-how’ knowledge in architectural representation. Because explicit knowledge is shared, systematic etc. (Nonaka, 2007; Smith, 2001), just like ‘architectural conventions’ that are a part of and contain ‘know-how’ knowledge. Ackerman expressed architectural conventions as “elements of a language” through the notion of “mutual agreement” (Ackerman, 2002, p. 316). At this point, representation techniques such as plan, section, elevation, etc. can be mentioned. These techniques, as in explicit knowledge, have features such as translatability or definability. But is it possible to design by knowing only these rules of the architectural representation techniques? The concept of explicit knowledge has to be interconnected to those concepts of tacit knowledge to overcome this problem.

Polanyi has discussed the tacit knowledge to rethink “human knowledge” through the approach of “we can know more than we can tell” (Polanyi, 2009, p. 4). It is ‘personal’, ‘difficult to share with others’ (Takeuchi, 2006; Toom, 2012). Because of these features, tacit knowledge has been associated with “designerly ways of knowing”, a concept that Cross discusses and utilizes to explore how designers think and make (Cross, 2006). The relation architectural representation and tacit knowledge reveals situations that can be considered as “spatial punctum” (Hays, 2015). Because, “... these implicit models profoundly shape how we perceive the world around us” (Nonaka, 2007, p. 165). The explicit and tacit knowledge relationship established for the design thinking takes action within the design process. “Design activity encompasses cerebral activities including thinking, imaging and decision-making as well as practical and externally perceptible activities...” (Pedgley, 2007, p. 465). Therefore, if design action is a multi-layered and multivariate process and is discussed through different approaches, it is personal and needs to be evaluated through different dynamics for each designer. Because of that, while it has an expressible content, it also has an aspect that cannot be expressed.

Expressionability, in the context of architectural representation, has been associated with the representational theory. The representational theory is generally discussed through ‘mind’. “According to representational theory of the mind, while mental states differ, one from another, mental states are representational states, and mental activity is the acquisition, transformation and use of information and misinformation” (Sterelny, 1990, p. 19). What is considered important for design action is how the theory unveils the tacit things in action through a reflective process. Because, although the representational theory is evaluated on the representativeness of something, it also includes a triggering side which allows the non-representational things to be revealed.

According to the non-representational theory, events and their content gain importance. Thrift, who is accepted as the ancestor of the theory, defines this as follows: “Non-representational theory takes the

leitmotif of movement and works with it as a means of going beyond constructivism” (Thrift, 2008, p. 5). Besides, non-representational theory has characteristics that are nourished from “everyday life” (Cadman, 2009) and shaped by the inner world of the person. However, the fact that the inner things cannot be fully represented does not preclude the possibility of being triggered through representations (especially when the representation is layered). Because “all experiences and feelings have representational content, not just perceptual experiences” (Tye, 1995, p. xv) and “...generally have intentional content” (Tye, 1995, p. 131).

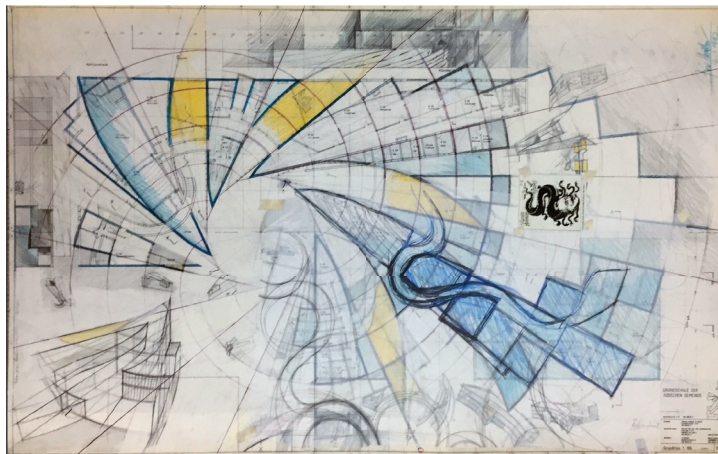
In sum, all these theories interact with each other, to generate layers in design and to create the ‘performativity in personal knowledge’. Thereby, layered representations provide the opportunity to discuss the personal and unique aspects of the design process. With the overlay of different layers of knowledge, the architect establishes a simultaneous relationship between what s/he makes and thinks. This situation can also be considered as the active organization of ways of thinking. In architecture, this relationality and its results give an opportunity to make ‘personal way of designing’ emerge. If so, we can ask the question as follows: How does this theoretical frame meet with the practice?

To discuss the relationship between the theory and the practice, it is possible to ask: How can these layered drawings be decomposed to understand the personal way of designing? For that, one of the Zvi Hecker’s drawings for the Heinz-Galinski Berlin school project [4] has been chosen. To get more information about the relation between the layering in drawing and Hecker’s way of the designing, this drawing produced in the development phase of the design process was chosen. It is considered important because it reflects both the traces of design thinking and the signifiers of design action. For the analysis phase, two sets of data are followed. The first set is about the decomposition of the drawing. The second set is about Hecker’s statements of his design thinking. The obtained data allows for the comparison the two sets.

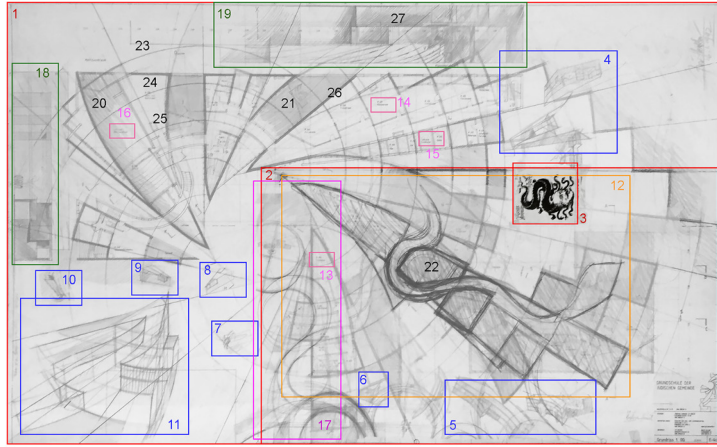
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### 3. Decomposing of the drawing

When we look at the drawing (Figure 2), we can see that there are different types of layers. So, how can it be possible to decompose this drawing? To decompose the drawing, a reading system should be generated and some types of elements should be defined. For this, an analysis of the drawing through the visible elements is made (Figure 3).



**Figure 2** One of the Heinz-Galinski School project drawings (Source: Z.Hecker’s private collection, Photo by Asar, H. 2019).



**Figure 3** Analysis of the drawing.

- Firstly, the basic and the technical **layout plan** (1) is observed. This plan includes a form of the sunflower which is used by Hecker as a metaphor. Primarily, the sunflower form is geometricated and scaled for the school program. In the form, the spaces and their relations can be seen, and also, which functional program they contain. This technical hand-drawing was used after being printed on the blue print to work on it again.
- The colored parts (20, 21, 22) are catching the eye. **Using colored pencils** to fill the main parts of the sunflower shape seems to be important because this act allows to emphasize the sunflower shape formalistically and to create a new perceptive layer of the drawing.
- There are also some sequential circular shapes (23, 24, 25) on the drawing. On a closer look, these shapes reveal a certain logic. They are related to the size of the space and most probably to the constructional elements (such as columns). These lines or shapes can be considered **as an expression of construction knowledge**.
- On the technical drawing, there are some **writings** (13, 14, 15, 16) regarding the names of the spaces. In this way, it becomes easier to interpret the relation between different spaces and programs.
- While working on the drawing, Hecker has drawn many **perspectival sketches** (4, 5, 6, 7, 8, 9, 10, 11) surrounding the plan to understand or imagine how these forms can be seen. Most probably, he wanted to control the appearance of these figural relations, because of the building's form and its different aspects.
- There are also two **elevation drawings** (18, 19) on the paper. Even if they are blurred, they allow for the interpretation of the building height.
- We can see some traces (17) of the circular shapes. They have been erased. But their trace is still on the paper, and that creates an additional layer of drawing. Because of that, another layer can be that of **the traces of the erased things**.
- A tracing paper is taped on the drawing. The tracing paper permits us to see some of the underlying perspectival sketches, the drawing parts of the plan and circular shapes, which in fact allows the other drawings of the different moments of design process to be seen. Further, it makes the drawing **physically layered** (2).
- Then, '*Caricature of Dreyfus as a Traitor*' image is taped on the blueprint paper and trace paper. The different 'snake' shapes from the image can be seen. This image creates two different layers for the drawing; a physical layer (3) and a metaphorical layer (3). Later, this **metaphorical layer** develops into a very concrete object of the project as it is used as a form-giver for the connecting corridors in the school.
- Hecker has used **the free-hand drawing** with the searching lines (12) on the tracing paper while seeking the connection with this metaphorical layer. Thereby, although physical layers contain different kinds of knowledge, they support each other as a visual connection.

- Finally, there are also **different types of lines** such as hachure (27), coloring (22), stable lines (technical lines) (26) and unstable lines (searching lines) (12). They point out how the architect thinks and communicates with the drawing during different stages of the design process.

According to the decomposition of the drawing, we have defined eleven layers. These layers contain different knowledge types but as they are used together, they compose the drawing. When we look at them, maybe, we cannot tell the temporal sequences of layers but we can describe them separately. Thus we can also make a deduction about the relationship between layers. Because, these layers are the visible signs of the different moments in the design process. Therefore, this drawing is a kind of documentation and hybridization of things which are related to the personal decision-making process in architectural design.

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#### 4. Hecker's statements about the design process

Hecker utilizes the cooking metaphor for the design process; checking the occasional taste while cooking, whether it is salty or its spice is missing. The same applies to the architecture. For this reason, it is necessary to draw continuously, to re-think the ideas, processes, and developments through the drawings (Hecker, 2019). Just like the meal gains flavor by checking taste, the building also gains its original language through various seekings, which are perspective drawings, overlapping drawings, notes and etc. These seekings become visible through representation. So, Hecker's discourse is useful to understand why he uses many drawings on the same sheet. Besides, it expresses his architectural ideas.

According to Hecker "An architectural idea is like a newborn baby, it needs our care for a long time, at least until our monologue turns into a dialogue; my drawings, its lines and colors, are a means to seduce the child to speak its mind" (Lepik, 2012, p. 228). When interaction moves from monologue to dialogue, the designer begins to communicate with representation and the relationship between thought and action becomes active. Thus, design and representation begin to create its world of meaning, its language, and its making style. "For example, the Jewish school began with the metaphor of sunflower, but later, it was interpreted as an open book on the urban scale. This is its change... But when I think about it, I find the metaphor is convenient for the relation of school and book" (Hecker, 2019). This change is directly related to the nature of the design. Because sometimes "what we are looking for is not what we will find" (Lepik, 2012, p. 229). It gives us a clue about how Hecker's thoughts or communications with the project have changed in the process. It can be seen even in a single drawing, which is chosen as an example. Because the drawing changes and develops continuously together with the design action by layering. The important thing is here that we can see how the whole tension and communication, triggered different layers on the same page.

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#### 5. Conclusion

In design, the thinking and action relationship develops, changes, matures and eventually finds its way, just like a 'newborn baby'. So, every design is a journey for its designer. And, if the representation is to express our journey, many layers guide us even though we are not aware of them in the design process. This journey has opened through the sunflower metaphor for Hecker. But, he did not only hold on to this image. He reinterpreted this image and his thoughts into the new perspectives and produced many further drawings during the design process.



Hecker says that “I draw, I have to think” (Lepik, 2012, p. 21). We can see this argument in his drawings and this could be one of the triggers for layering in representation. According to the decomposition of his drawing, we defined eleven layers. These can give us a clue regarding to how we can read and understand the relationship between design thinking and design action. For example, Hecker’s use of the ‘cooking metaphor’ for the design process can be associated with some layers: ‘layout layer’ with the ingredients we have for cooking, ‘construction knowledge layer’ with the general knowledge of how to use these ingredients, ‘the traces of the erased things layer’ with the checking of the taste while cooking. It can also draw a comparison via the relation between the dialogue and the ‘newborn baby metaphor’. This metaphor can be evaluated in the context of communicating, taking part in the development of something, revealing the tacit things, and creating something original. Thereby, these approaches can be discussed through the ‘perspectival sketches layer, elevation drawings layer, the free-hand drawing layer’ and ‘different types of lines layer’. The last thing in Hecker’s opinions is about using the metaphor and its transformation during the design process. Using metaphor in the design process allows expressing the idea of design by associating it with something known. Whereas the metaphorical layer is directly related to this idea, ‘colored pencils layer’ and ‘writings layer’ support it through expression. These spelling give a clue about how the design process proceeds and how his personal performativity in personal knowledge gains visibility. In terms of the layers and their relations, Hecker’s thoughts and practice have developed along with the drawing defining his way of designing. This way of designing can briefly be expressed as ‘drawing on drawing’.

#### Endnotes

- [1] This article is prepared from an ongoing Ph.D. based on “layered representations in architecture”. In context of the thesis, an article is prepared which is related to explicit and tacit knowledge theory, named by “Layering in Representation: Rethinking Architectural Representation through Perry Kulper’s Works”. But in this article, alongside explicit and tacit knowledge theories, representational and non-representational theories are used and are associated with architectural knowledge.
- [2] Interview made by Hande Asar on 13.11.2019 with Zvi Hecker in his Berlin office.
- [3] In this study, the so-called representations were named as “mixed structured representations”.
- [4] The project, which is an international competition in 1990, was completed in 1995 (Pearman, 1998, p. 104). Hecker started the project with the sunflower metaphor which is an important image from his “cultural background” (Belogolovsky, 2016).

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