LSRM FINAL ESSAY ASSIGNMENT

FROM RESEARCH TO DESIGN, TOWARDS THE CORE OF ARCHITECTURE

What is the methodological approach when doing research toward my architectural design intervention?

In what style should we build?

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I INTRODUCTION

This essay is written as a final assignment on the course Research Methods and focusses on the differences, similarities, and relations between researching and designing, by analyzing design- and research approaches. This will ultimately result in a clear vision on my own research approach and a better understanding towards the final design project. The main aim is to gain knowledge and a better understanding of the origin from where ideas in the complex and nonlinearly process of research and designing come from. Every day architects and designers in the build environment are invariably taking care of issues by discovering solutions through the methods of research. In spite of the fact that the way of researching may vary between different companies, one can unmistakably express that exploration is going on. Design research has been conducted since the very beginning of engineering and architecture. One can say that architectural research has been done throughout the history of architecture and since the commencement of design. The improvement of specific contractual structures or building materials throughout hundreds of years of development, is the result of trial-and-error experimentation, combining techniques and improvements of building material observations[1].

By concluding the findings conducted in this essay, a better understanding of the different design methods is combined with my research done in the thesis, prior to the individual design project. The importance of knowledge in design and research-methodology is relevant for future streamlining in research and design processes, especially in the final design project for the graduation studio. Therefore, it is critical to understand which type of design decisions can be made by gained knowledge from research, so therefore more rationally, and which are primarily defined by intuitive thinking, so emotionally decided. Recognizing these different typologies will also provide a clear vision and therefore I can come up with a clear concept design. The main interests gained during this course are the deeper underlying ideas of architectural or research-oriented thoughts, with their overlapping relationships, such as evidence based design and praxeology. There are quite some things changing in the way architectural firms such as UNStudio MVRDV and Oma are focusing on research. They all have expanded their own resources in research divisions for architecture true their separate departments UNSense, The Why Factory and AMO, who are purely focus on conducting thorough research. Clients are more willing to invest resources in architectural development to get tailor-made research based designs, or also called “evidence-based design” (EBD).[2] Therefore, further investigation in these topics is done during this essay by looking closer into the different approaches of well know architects, theorists, and historians.

By analyzing their research approaches, I will try to find out what my own research approach is and how this helps to steer the design process. So, the relevant research question is: *“What is the methodological approach when doing research toward my architectural design intervention?”.* The main interests I gained during this course are the pure core forms of the architectural practice, so how traditional typologies can be found in material culture or referred to in most designs. The tectonics in architecture, the core- and art-form are there for unraveled and combined with controversial types of architectural or research approaches. Hereby more grip on the designing a Hyperloop station for the future is sought. By understanding the traditional techniques and material culture, future innovation can be steered towards new traditions in building development.

By looking closer into methodologies, a better understanding of the search to directive themes in the beginning stage of the design process is being sought. Secondly, the interesting question from Hubsch Heinrich *“In what style should we build?”* [3] is examined by looking closer into the design principles of well-known architects and theorists, like Le Corbusier and Adolf Loos. Both architects use a completely different way of thinking and approach towards the research and design process.

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[1] Linda Groat & David Wang, *Architectural Research Methods* (New Jersey: John Wiley & Sons, Inc., 2013), 6.
[2] Linda Groat & David Wang, *Architectural Research Methods* (New Jersey: John Wiley & Sons, Inc., 2013), page 5.
[3] Hubsch Heinrich, *In What Style Should We Build?* (Santa Monica: Wolfgang Herman, 1992)

II RESEARCH-METHODOLOGICAL DISCUSSION ON RESEARCH AND DESIGN

The distinction between the design process and the research process can only be made after the difference between design and research have been defined. The relationship between these themes is being examined regularly and tried to explain in many different ways. I would describe my research methodology within the design research as evidence narrative based design, so a combination of research and evidence-based design. Evidence based design essentially is the way someone gathers, orders, inspects and process substantial amounts of data. With this data, one is guided the correct way and can pick what intercession to make inside the task. This also means that you sometimes have to investigate subjects that are not directly related to architecture but to other complex fields. Which is also mentioned in Research Methods for Architecture: “Fundamentally disciplines rarely benefit from working in isolation, particularly when it comes to research; different perspectives allow you to think differently about places”[4]

The works of a couple of interesting theorist regarding these subjects are looked closer into. According to Christopher Frayling[5], educationalist, pedagogue and writer, the distinction between the stereotype of the scientific researcher, for example, a laboratory technician, and the creative designer is a lot smaller than many people think. Apart from creativity, the design process does indeed seem to have ‘scientific’ research, while the research process also contains creativity in addition to scientific research. Here the terms research and creativity appeal to the imagination and they ensure the division between the two processes. The continuing examination of other contextual analyses of specific building or structure types have enabled designers to see a rehashing pattern among certain classification of building typology[6]. Recorded research is very comparative yet not totally identified with typology studies. One can research, for my situation as well, mobility hubs developed in various occasions, by different societies and times on diverse areas around the world, to gain knowledge about the way they work. According to Tom Jones, theorist and writer, the difference between design and research is the objectivity. To be able to make this explicit, he gives an example of the 'Group Recherche d'Art Visuel’ [7]. They made art where it was attempted to take a totally objective attitude. In other words, the goal was to create a non-personal type of art so that art can be regarded as research. This art form had to convey objective knowledge so that it could be labeled as research in its essence. If we abandon this line of thought on the process of design, this creates a lot more clarity. Objectivity has virtually never been there because we have continuously looked at frames of reference and decisions taken earlier. Making an impersonal design is, therefore, something that is very difficult to realize, unless some sort of computer simulation software is used. This can be reality with artificial intelligence and 3D printing in the far future of the year 2100, which brings the human charm out of the design process. There is only a rational way of deciding, a purely research-oriented attitude. A distinction can, therefore, be made on the basis of the presence or absence of subjectivity, whereby research is seen as an objective action and design contains subjective elements.

What Ken Friedman, chair professor, describes in his reading[8] is that research by design cannot be seen as actual research. He states that this form of research in no way constitutes a description of the absolute physical reality, contains no predictive value and does not make use of rational analyzes and therefore does not develop explicit knowledge. Friedman does have a point there in my opinion. The investigations during this thesis design research process have been guided by evidence based on analyzed reference projects and designs. This has provided a lot of input for the design decisions to be made in the future, but provide little or nonscientific substantiation. They actually do not add anything to the general available scientific knowledge, yet.

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[4] Ray Lucas, Research Methods for Architecture (London: Laurence King Publishing Ltd, 2016), page 9.
[5] Christopher Frayling, *Research in Art and Design* (London: Royal College of Art, 1993), 1-6.
[6] Ray Lucas, Research Methods for Architecture (London: Laurence King Publishing Ltd, 2016), page 12.
[7] Tom Jones, *Leonardo*, *A Discussion Paper on Research in the Visual Fine Arts* (Birmingham: The MIT Press, 1980), 89-93.
[8] Ken Friedman, *Research into, by and for Design* (Journal of Visual Art Practice, 2008), 153-160.

III RESEARCH-METHODOLOGICAL REFLECTION ON TECTONICS

The choice for the subject tectonics in the field of architecture has multiple reasons. At first, the main curiosity for this subject comes from the difficulty to define what tectonics precisely are. Reading, talking and discussing this subject continually results in an interesting dialog. But the essence of tectonics is about the most meaningful elements in architecture, trying to define what the cohesion between structure, material and spatial experience is. Kenneth Frampton, architect, historian, and well-known theorist, is writing about this in his essay[9]. Another reason, also mentioned in Frampton's essay, is the statement that nowadays scenography or theater architecture is often the basic way of designing buildings. This implies that the pure form of a building, the essence what assembling or constructing a building should be, is nowadays almost unrecognizable. This statement is not completely true, but the very basics of constructivism, reflecting on the ancient Greek and Roman architecture is far gone.

Karl Bötticher, architect, art historian, and archaeologist, introduces therefor the terms Core-form and Art-form in his book[10]. The pure form of constructing, installing walls or roofs is nowadays often cladded with a decorative 'coating', and therefore not visible anymore. Gottfried Semper, architect, art critic and professor talks in his book[11]about the four essential basic elements of architecture; hearth or fire, roof or carpentry, enclosure or weaving, mound or stonemasonry. Semper is attempting to explain the origins of architecture true the lens of anthropology. The origins of each element can be found in the traditional crafts of ancient 'barbarians'. In this context, the heart can be seen as the main function of a building, the carpentry as the floor, the mound as the construction and the enclosure as façades. Semper defines the understanding as; *"the art of combining rigid, rod-shaped elements into an uncompromising system"*. This methodological awareness has a great advantage for understanding the core of the architectural profession.

For my own design project of making a Hyperloop Mobility Hub of the future, lots of (high)speed train stations have been analyzed. True Semper's lens one could say that the first task for designing such a station would be the seamless layout of the infrastructural program such as train- and metro tracks Hyperloop tubes and their platform. Secondly, the construction and enclosure of the building would be designed around this scheme. By acknowledging the basic elements of ancient buildings and decomposing modern architecture, you can find interesting similarities, which will help you in understanding the very essence of architecture. For example, the basic traditions of brick buildings in Amsterdam, how this has been the standard way of building for centuries and how this can help to find a narrative for a futuristic design. Besides this, it is also useful in the research process by seeking the purest forms of traditional architecture. Adolf Loos, architect and writer, described in his book[12] the idea that progress of a culture is linked to the reduction of ornamentation. He thought it was a crime to let artisans waste their time on ornamentation that merely brought the moment closer to where an object had become old-fashioned. Which is a decisive statement but can be seen as a core form of thinking about architecture.

[9] Kenneth Frampton, *Rappel a l'ordre, the Case for the Tectonic* (New York: Princeton Architectural Press, 1996), 20-32.
[10] Karl Bötticher, *Die Tektonik Der Hellenen, the Tectonics of the Hellenen* (Berlin: Textbände und Tafelband, 1874).
[11] Gottfried Semper, *The Four Elements of Architecture,* (Cambridge: University Press, 1989).
[12] Adolf Loos, *Ornament und Verbrechen, Ornament is Crime* (Vienna: *Sämtliche Schriften in zwei Bänden*, 1908).

What exactly can be understood by tectonics in its essence, remains the subject of interesting discussions and thus offers room for multiple interpretations. The very essence of tectonics revolves around the most meaningful values in architecture, the discovery of cohesion between structure, material, and spatial experience. This also accords with the statement made by Hendrik Petrus Berlage, influential architect and urban planner, in his book[13]. Berlage states; *"Since architecture is the art of spatial enclosure, we must emphasize the architectonic nature of space, in both a constructive and decorative sense. For this reason, a building should not be considered primarily from the outside".* But his vision on this trend is not necessarily negative, he sees it as a different approach to architecture with its benefits.

In order to place these more historical approaches in a practical context, the following two different design principles have been considered. Adolf Loos also introduces in his other book[14] Raumplan to explain and resolve the architectural difficult question and spatial design problems. One of the most important qualities of this design method is the complex but extremely carefully elaborated puzzle of the concatenation of different spaces, functions, and forms. However, this requires a particularly good form of spatial insight. Loos states in his book that the first task of an architect should be to create a comfortable and livable space. The second task is to construct the necessary underlying construction. This interacts with the idea of a functional approach to the infrastructural challenges in the design of a mobility transfer hub such as a Hyperloop station. The first main focus should be the logistical challenges that come with combining multifunctional transportation types together in one building. Differently said, don't design a floorplan from the top down, but shape the spaces themselves. Another quality of this approach is the smart way of applying different floor heights, which can provide an interesting route true the building, and can smartly separate different mobility types without using only walls for the demarcation of different spaces.

Le Corbusier's introduces Plan Libre in his book[15]. The major quality of this approach is the simple way of concatenating different spaces by laying out a construction grid of columns in advance. This gives an architect the advantage and freedom to design in a relatively serene way. But attention should be paid to ensuring that the grid structure and façade do not create a static interior space, in which all functions must be accommodated. While looking at the different researched train stations across the world, something interesting can be seen in the more modern type of these stations. They all have a quite open and free designable layout, especially in the main hall around the infrastructural nodes within the building. This requires a careful way of looking at an appropriate building envelope and construction in order to then be able to compose the spaces, volumes and their functions in a playful manner as a coherent entirety. Plan Libre has the charm that through the free manner of dividing, the composition of forming spaces according to the function they have, remains relatively simple. The most compelling and misjudged yet most complex research technique known to designers, specialists and researchers is the utilisation of legitimate argumentation in blend with heuristic strategies. Heuristics can likewise help diminish complex issues by disposing of parts that have just been explained with data. These two research techniques can take care of issues and legitimise arrangements because of consistent thinking and endless past encounters. These probably won't ensure the most ideal, adequate or flawless arrangements yet they make a designer act without thinking because of learning, knowledge and experimentation.[16]

[13] Hendrik Petrus Berlage, *Thoughts on Style,* (Santa Monica: The Getty Center for the History of Art and the Humanities, 1996), 152.
[14] Adolf Loos, *Das Prinzip der Bekleidung, the Principle of Cladding* (München: Herold, 1962).
[15] Le Corbusier, L'Art Décoratif d'Aujourd'hui, the Decorative Art of Today (Cambridge: MIT Press, 1987).
[16] Nigel Cross, Design Thinking: understanding how designers think and work (Londen: Bloomsbury Publishing plc, 2016) page 23.

IV POSITIONING AND CONCLUSIONS

This research essay has made it easier to understand the relationship between research and design and the way to approach such a process. Objectivity is an essential point to be able to state that a design can be used purely for research purposes. In practice, however, this rarely applies, certainly in architecture due to the fact that also my own approach is mainly evidence based design true the scope of the analysis of relevant reference case studies. The fact that this form of design research in no way describes what the absolute scientific reality is, corresponds with the position of the design studio project, which is about designing a masterplan for the year 2100. This naturally involves a lot of hypothetical questions and assumptions, where it is usually difficult to provide a substantiated argumentation reflecting your knowledge gained by research, but this is exactly why the focus of the studio is primarily on doing thorough research as much as possible. In addition, many impulsive or intuitive decisions were taken as expected, only the research done was mainly focusing on finding a narrative and a style in which to design a future mobility hub. A surprising observation is that there is a strong correlation between the process of research and the design process. Many elements from the case studies of other existing train stations and infrastructural nodes, therefore, arise almost simultaneously, between research and design. A fruitful interaction between the relatively 'objective' research and the more 'subjective' design process. Nevertheless, when I look back at the research and design process so far, it is no longer completely clear how the sequence and variety of the steps and phases in the process have been. This is in line with Donald Schön, philosopher and professor in urban planning, he claims that experienced designers often do not explicitly know what they are doing during the design process. He calls this 'knowing-in-action' and describes this in his book[17]. He says that it seems as if experienced designers have mastered a difficult, definable but successful design system in a natural way.

Besides this, it is quite amazing how many elements from the design process can actually be traced back into my research, which elaborates the fact that thorough research of case studies helps to understand the complex infrastructural challenges which can be solved by evidence based design. This also implies for the investigated tectonic approaches of the various architects with their own strong argumentation on the way how they see what the core forms in architecture are. Summarizing the two approaches, Raumplan uses the function of a space to determine the spatial form from within. Plan Libre primarily uses the spatial form to define the actual function of a room within a building, while at the same time, the actual function also influences the final shape. This gives not directly an answer to the question; *'In what style should we build?'.* It depends on the way of approaching a design, Raumplan is definitely giving priority to the function to shape a space, which will be more feasible for designing a transportation node, while Plan Libre does the opposite, but still combines some of the essences of spatial design. So, the question gives a certain direction in the way I should approach the design of the Hyperloop station. Therefor it can be still a trial and error phase as mention at the beginning of this essay. Relating to the past discussions and lecture series I could say that one should know when to apply heuristic thinking in correlation with proof based designing. The case studies researched only give me guidance and arguments to backup design decisions and work towards a more evidence based design. This reflects on the quote "*all architectural activity is an exploration within identifiable disciplinary fields of experimentation, based on equally identifiable 'systems of knowledge"* from the course syllabus.

[17] Donald Schön, *The Reflective Practitioner, How Professionals Think in Action*, (Leiden: Taylor &Amp; Francis Ltd, 1991).

Now trying to answer the initial research question of; *'What is the methodological approach when doing research toward my architectural design intervention?'*. Research based design and evidence based design are research methodologies that can significantly influence design decisions in de whole process. In the Complex Projects studio, most people approach the problems and research questions in a very analytical and data driven way. This elaborates the fact that everyone has to thoroughly analyze, investigate and argue every aspect of the researched area and come up with lots of diagrams and data based drawings. So, you could say that evidence based designing, as it is for me, is more effortless and optimal for this type of studio.

This is still of considerable importance for modern architecture and is indicated by the different architectural approaches studied here. The architectural position refined by this essay corresponds with the preceding interests in the pure core form of architecture. The essence of building, clean, thoughtful and straightforward comes from the predilection for the profession. Looking at the chastened people who have historically meant a lot to architecture, will definitely have an added value for finding direction in the design processes towards making a mobility hub of the future. Taking this into the final apotheosis on the road to becoming an architect, will hopefully result in a great final design project.