SYNTHESIZING PHENOMENOLOGY AND SPACE SYNTAX
A physical encounter of data space and humanity

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I   METHODOLOGY TOWARDS STUDY OF DATA SPACE

The ontological underpinnings to the architectural profession involve complex knowledge from multiple disciplines, including art, psychology, politics, technology, and engineering, which made architectural design a comprehensive process that embraces art and science. A thoughtful design required a strong research base to support every decision during the design process. Methodology in research is therefore a foundational tool to initiate design. The course Lecture Series of the Research Methods opens my eye to numerous methodologies and provides me a systematic approach to research. The seminars enriched my understanding of epistemology that provides me a wide spectrum of methodologies from the scope of multi-discipline which target different aspects in the architectural discourse.

What I found intriguing is the fact that research methods are not bound only by a positivist approach involving rationality and data, but also embrace psychological and empirical discourses. It allows me to carry out research quantitative and qualitative complimentarily. Acknowledgment of the wide spectrum of research methodology is particularly important to the study in complex project studios, in which many hard data was collected as the first step to understand the site. Those methodologies give structure to what and how data is to be collected and interpreted.

This paper aims to examine how a graduation research question is approached through specific methodologies and theories and how could their historical evolution inform my architectural inquiry.

In my graduation project, my concern falls on the physical ramifications of the outbreak of cloud storage and Internet usage. Along with the growing amount of data usage, more data infrastructure, which designed with optimal machinery efficiency with lack of physical relationship to humans, is expected to be built in the urban area to meet the demand of even higher connectivity and lower latency brought up by the advance technology and relocation of business center. It means more urban space will be taken up by data centers that are designed purely for machines and servers, which in turn harms our livability. As data usage is growing exponentially every year, it is crucial to design a way to find out extra that data center could bring to the people and integrate such digital infrastructure more harmoniously into the city fabric.

In my research, I questioned what extra values could data center contribute to the people and the urban environment of midtown Manhattan, in order to potentially come up with a way that humanity and physical data space could intermingle to allow infrastructure to interact more meaningfully with people. The sub-questions formed along with my fascination are listed as follow:

1.   What is the current trend of data usage? What is the typology data center throughout history and how do they operate?
2.   How will the data center design be different if the urban context is taken into account during the design of the data center?
3.   Could a new data center in Northeast midtown Manhattan support its vision to regain its losing position of central business district?
4.   How can digital infrastructure and humanity intermingle to create a more human space for the neighborhood?
5.   How can architecture fulfill the ephemeral desires of human driven by the rapid-changing digital landscape?
6.   How can architecture be relevant across time in the ever-changing digital world?

II   RESEARCH METHODOLOGY

The research of my graduation thesis will be conducted primarily in a phenomenological framework and supplemented by space syntax method. First-hand perceptual experience, literature review and data-analysis are employed complimentarily and documented via video and photography, reflective writing, mappings and mental mappings.

My approach of first-hand phenomenological research method was inspired by David *Seamon,* a professor of Architecture at Kansas State University. He introduced two methodological approaches in his journal *A Way of Seeing People and Plac* (Seamon, 2001) which I found relevant to my thesis. They include first-person and the hermeneutic phenomenological research method.

Seamon's first-person phenomenological focuses on the researcher's own firsthand experience of the phenomenon as a basis for examining a specific characteristic and quality (Chaffin, 1989; Wu, 1991). He raised an example from the approaches Violich used to examine the spatial qualities of several Dal-matian towns, in which techniques such as sketching, mapping and journal entries were used to document the place he visited several times. For hermeneutic phenomenological research method, Seamon raised another example of Norwegian architect Thiis-Evensen who read a lot of literature of different buildings in different cultures and historical periods to develop his own experiential theory through interpretation,

Taking similar approaches for my research, the field trip was conducted to develop a situated knowledge of Manhattan. I intentionally selected accommodation in the site area where I could engage with the site through direct interaction with the residents and inhabitation. I visited in-person several data centers of different typology located in midtown and downtown Manhattan. Sketching and mental mapping were adopted to record the specific scene I encountered during the visit and their location. It captures moments that provide hints on how people live, react and interact with this kind of infrastructure. The intangible sensory, such as movement and sound were captured via filming and recording. I revisited the same places several times and wrote a reflective essay to document my perception when I approached, arrived and left the data infrastructure I study at different time and days.

Research on an urban scale is needed to study what impact does data infrastructure creates on human activity, transportation, the built environment as well as how it facilitated the formation of the business center. Since Manhattan is a city of real estate that economy constitutes a large portion in its architectural discourse, a pure hermeneutic approach would be incomplete and unrealistic in analyzing the site. To integrate the hermeneutic approach discussed so far with the positivist tradition in epistemology, space syntax will be employed to tune the research into account of social, economic and environmental phenomena. These phenomena include patterns of movement, human interaction, urban growth and societal differentiation. The space syntax generates axial maps to analyze urban systems. The production of space syntax diagram will be supplemented by mappings drew according to hard data collected via the use of software Qgis and data sheets downloaded from the government website of New York City, which includes information like density, racist distribution, land use and land value, etc. It provides information on spatial-temporal regularity of human activity, the evolution of the city centers and sub-centers that determine cities' livability.

III   THE EVOLUTION OF PHENOMENOLOGY IN ARCHITECTURAL DISCOURSE

There is a broad set of phenomenological traditions throughout history, among them it is German philosopher Edmund Husserl who initiated the idea phenomenology in his two volumes of Logische Untersuchungen. Husserl's conception of phenomenology was rooted in a pure epistemological attitude which stressed on the study of an individual's lived experience of the world, in his words, 'the acts of attending, perceiving, recalling and thinking about the world' (Laverty, 2001). He rejected positivist ways of logical deduction or objective observations and contended that acquisition of one's conscious experience should be the object in a scientific study (Husserl, 1970), which he claimed as 'science of pure phenomena' in an inaugural lecture at Freiburg im Breisgau in 1917. His goal was to achieve a state of transcendental subjectivity

on the participants' experience in an objective way wherein biases and presumptions from the researchers were suspended.

The phenomenology tradition was then evolved when Martín Heidegger extended the phenomenological discourse to embrace also subconscious and unconscious experience of a phenomenon, an idea which was known as hermeneutic phenomenology proposed in his book Being and Time (1927). Whereas Husserl focused on the nature of knowledge, Heidegger turned into an ontological perspective through which the focus lies rather on the nature of being and temporality (Neubauer, 2019). With his ontological focus, Heidegger introduced the term 'lifeworld', which referred to the idea that 'individuals' realities are invariably influenced by the world in which they live.'(Lopez, 2004) He believes that human could not get rid of referring to their own past experience in understanding a phenomenon. He therefore proposed an interpretive approach, in contrast with Husserl's descriptive approach, which allows preconception and reflection from researchers to take part in the analysis process.

Most ideas in Heidegger's existential philosophy were later retained by Merleau-Ponty, while Ponty turned his focus to the perceptual experience of a thinking body. His key concept is underlined in his theoretical text Phenomenology of Perception published in 1945, emphasizing on the engagement of a non-reflective intentional body with determinate spatial situations. Juhani Pallasmaa's book *The Eyes of the Skin: Architecture and the Senses* evolved Ponty's perceptual experience further to the sensory perception, in which primacy lied on bodily sensory experiences synthesized by the mind (Pallasmaa, 2005).

Ponty and Pallasmaa's theory on bodily perception was well adopted by architect Steven Holl. His inspiration from Ponty was stated "While sensations and impressions quietly engage us in the physical phenomena of architecture, the generative force lies in the intentions behind it." (Holl, 2006). In his research and design process, he explored the phenomenal and perceptual experience through drawings using pencil and watercolor. The ambiguous body sensation and intuition induced from the site were presented in the drawings by the use of atmospheric texture and color, which were later transformed into an architecture that rich in materiality and engagement with the site or context.

Architect Peter Zumthor was also well influenced by Pallasmaa's phenomenology. Peter Zumthor stressed on the first-person experience of the site by which a field visit was conducted. In acknowledging the site Peter Zumthor was sensitive with all senses he experienced, including sight, smell, sound, and touch. He then developed a spatial narrative though documentation of every detail, such as light quality, the sound of birds and human conversation, through writing and photography for example presented in his book *Atmospheres*. This research method efficiently informed his phenomenal design as he explained 'I allow myself to be guided by images and moods that I remember and can relate to the kind of architecture I am looking for.' (Zumthor, 1998, p. 25)

The mentioned research approaches informed me of the importance of intangible acknowledgment towards an issue, given by personal experience, sensation and situated knowledge. These elements are important to my research question in exploring the physicality of data by reflecting on the underlining perceptual experience and body engagement with data, which cannot be deduced from a typical form of the data center. Reflective writing and documentation of sensation are useful ways to approach my research question. The documentation will be carried out mostly through photography, videography and sound recording of the site.

IV SYNTHESIS OF POSITIVIST AND PHENOMENOLOGICAL APPROACH

In considering the research methodology, the major difference between transcendental phenomenology and hermeneutic phenomenology lies in the role of researcher and whether epistemological assumptions were made during the state of observation. Among these two major phenomenological approaches, I agree more to the hermeneutic interpretive approach that phenomenology needs to be experienced in relationship with one's past experience instead of to be read objectively. Empathy and reflection on a situation allow us to understand the underlining essence of a phenomenon. I will therefore adopt the hermeneutic phenomenology in researching my thesis, especially with sensory and perceptual focus as asserted by Ponty and Pallasmaa. Perception and sensation are relevant in studying the impact of data, which exists as a virtual entity that creates impacts on our physical life. I found what Juhani Pallasmaa has raised about what the current threat to architecture particularly relevant to my research question, which he said architecture in our time running into two extremes, either towards instrumentalization or towards aestheticization. To the instrumentalization side, he explained "our *secular, materialist and quasi-rational culture is turning buildings into mere instrumental structures. devoid of mental meaning, for the purposes of utility and economy."* (Pallasmaa, 2011) This idea coincides with my research intention that data center as a pure utilitarian infrastructure that lacks humanity and mental meaning to the society. To research with this methodology, I will adopt a series of sensational and perceptional documentation, such as drawing a mental mapping during a site visit to data infrastructure, which records my perception when I look at the data infrastructure and my sensation when I use a data device. It could inform me of their inter-relationship as well as my future design approach.

However, since the researcher is always an active participant in the investigation process, it poses a threat that an architect may project overly their own personal interest onto the site instead of understanding the real contextual experience the site informed him. I think in this sense Husserl's approach allows a more thorough understanding of an unknown situation since it suspended any biases and preconceptions. In the complex projects studio we started a lot of hard data analysis whereas all information we received was based on what the Internet provided. It may easily cause biases when we are situated in the site and collect information that only in favor of our presumption. I would therefore adopt the use of Husserl's position during the first visit to our site in midtown Manhattan. The presumption will be suspended and judgment will not be made until I developed a certain situated knowledge within the site. It can make sure a fairer and more neutral acknowledgment to the unfamiliar site to be conducted.

In complex projects studio, a general research approach was mapping of hard data such as land use, land value, population distribution and transportation network. It provides a solid and rational ground to acknowledge the site. However, researching on urban context is a process too complex to be made only from rationalization. The research will be incomplete and have fallen into the threat of instrumentalization as Pallasmaa mentioned if the phenomenological side of analysis is not discussed. It is particularly important to my design question through which I aim to explore the extra social and environmental values data center, as an essential (rational) infrastructure could bring to the society, as well as its metaphorical implication. Intuition and vagueness in sensation are therefore important elements to add on top of the rational analysis generated within typical complex projects studio's framework to strike a balance between both rational and phenomenological research as advocated by Pallasmaa.