

Mosque architectural space: from a phenomenology of senses to multiple realities.

DOI : 10.36909/jer.ICMA.20215

Ahmed A. Ahmed, Ibrahim Maarouf. Dina M.saadallah,

Library of Alexandria & Dpt. of Architectural Engineering, Alexandria University, Egypt.

* Corresponding Author: ahmed.abdelmoneim@bibalex.org

ABSTRACT

The architectural space of a mosque can be determined using ocular-based assessment, however, a question arises in contradiction to this notion; is the ocular aspect all that the architectural space conveys to reality? This study suggests that architectural space as a phenomenon, which reveals itself to the human senses, experience, meaning, and memory will define the reality or even multiple realities of mosque buildings.

Keywords: Sensorial architecture - mosque design – phenomenology- (IPA) interpretative phenomenological analysis- Architectural Space.

INTRODUCTION

It is through my experience in the field of architectural conservation and history of architecture that the question of the value of architectural buildings emerged and triggers what is the reality of architectural value for architects and users alike. However, these buildings are being demolished. This intrigues the mind that may be users of these buildings do not find the architectural value architects dictates as true, hence, it alienates the users' interaction with these buildings and the deep understanding of the meaning these building may present.

The contemporary technologies and platforms such as the metaverse related add new forms of realities that are subjective depending on how the users' senses and judgment construct these new forms of realities in his mind. The architectural space of mosques and any other building for that matter is to be appraised for value from the subjectivity of the users and the researcher alike. Hence, the methodology that is used in this study is interpretative

phenomenology. The research methodology used in this study is (IPA) interpretative phenomenological analysis adapted from Van Manen's method of hermeneutic phenomenology. This study is an endeavor to reveal the essence of architectural space in mosque buildings through human senses, experience, meaning, and memory and how all this shapes reality.

PHENOMENOLOGY IN ARCHITECTURE

Perhaps Kant's philosophy is influential to the approach to architectural space in this study. Kant argued that space is not an empirical concept, derived from an exterior self-experience, but that space exists priorly in minds as pure intuition, where all objects should be determined. Therefore, it is only from the human point of view that discuss space (Forty, 2000). His idea of space was developed by many German theoreticians in the 19th century and early 20th century such as Hildebrand (1893), Lipps (1893), Riegl (1901), Frankl (1914) (Üngür, 2011). However, Schmarsow's 1893 theory of *Raumgestaltung* (Mitchell, W.Swarzer, 1991) is the most substantial. It states at its bottom line that; 'spatial construct' is a property of the mind and should not be confused with the actual geometrical space. These theories and others were mainly developed in the early 20th century by Martin Husserl(HOPP, 2008), Martin Heidegger(Heidegger, 1924), and Merleau-Ponty (phenomenology of perception 1945) (Gallagher, 2010) All of them set new architectural theory within the realm of phenomenology (M. Reza, 2012). Phenomenology looks at the world based on personal sensation, experience, feeling, and memory. It is based on the belief that the individual calls on a heightened experience of all the senses to form their unique interpretation (Brown, 2015).

Later in 1941, in his book space, time, and architecture Gideon mentioned that space is defined by being projected in (GIEDION, 1980). The next millstone is the trilogy of Noberg-Shultz (Intentions in architecture, Genius Loci, The Concept of dwelling) he argued that space and character are not treated in a purely philosophical way, but are directly related to architecture, following the definition of architecture as a 'concretization of existential space'" (Shultz, N. 1979) moreover, socialization of perception and the process of "schematization", (Samalavičius, 2012) is how perception leads to the construction of an understanding of the world (Allison, 2017).

The social logic of space was developed by Bill Hillier and Julienne Hanson. Hillier's laws of the architectural object propose that human societies order their spatial milieu to construct a spatial culture, understood as distinct manners of ordering space to produce and reproduce the principles of ordering social relations. Space is, therefore, used to generate, as well as, restrict social encounters, according to the involved forms of social reproduction. In both circumstances, space is seen as an integral part of the social morphology, and not only a function of the principles of social reproduction (Leaman and Buildings, 2018)(Hillier, 1989). Today the theory of space in a phenomenological approach has been challenged by many such as Lynch (1960), Relph (1976), Alexander (1977; 1979), Norberg- Shultz (1979), and Hillier (1996) focused on a phenomenological view that takes into account socio-cultural relationships which create complex patterns of human behavior (Wijesooriya, N., 2018).

Juhani Pallasmaa in his book *The Eyes of the Skin* (2012) criticizes the supremacy of ocular centrism and the architecture of visual images(Tamari, 2017). He then calls for a new method that investigates the essence of what he calls the architecture of the senses. (Pallasmaa, 2012).

THE QUESTION OF REALITY, OBJECTIVE/VIRTUAL REALITIES

Phenomenology in architecture could show how humans experience architecture through their senses. The physical world is perceived through the senses; however, there are emerging new technologies that challenge the notion of the physical or real-world utilizing a computer-generated virtual environment. This dialect between senses and the physical world materializes notions of virtuality. To tackle this idea first one needs to differentiate between several terms. First, a virtual world could be described as being a virtual environment built by software representation of the real world or a designed one (Wohlgenannt, Simons and Stieglitz, 2020). Second, mixed reality (MR) is distinguished by a real-time mix between the real physical world and the digital virtual environment.

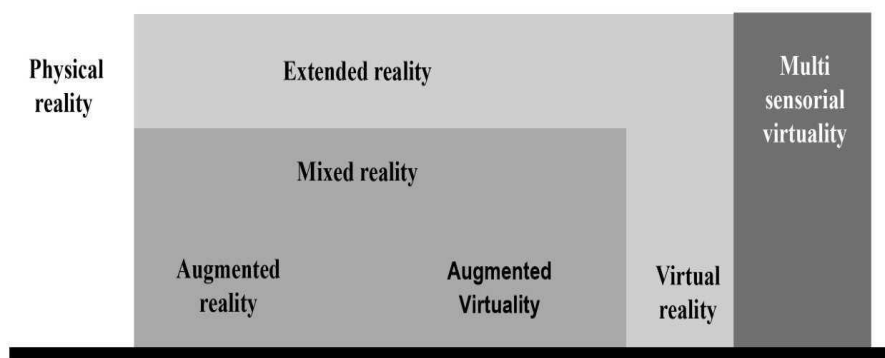


Figure 1 Reality- virtuality continuum adapted by the researcher after (Wohlgenannt, Simons and Stieglitz, 2020).

In this context, one also finds augmented virtuality (AV) and augmented reality (AR) as subcategories of mixed reality. AV or augmented virtuality refers to a software-generated virtual environment that is augmented with physical/real-world videos or images. On the other hand, AR augmented reality refers to the physical/real world combined with software-generated interactive objects utilizing technological wearables. Third, extended reality (XR) is a mixture of human interactions with software and technology of wearables (Fast-Berglund, Gong and Li, 2018). All the discussed terms above use only two human senses ocular and auditory. It is still within the boundaries of these senses that humans can distinguish clearly between what is physically real and what is computer-generated or virtual. However, in a more immersive experience using multi-sensorial virtuality using more senses like smell, taste, haptics, and temperature the individual will start to lose the fine line between what is real and what is virtual. This will cause to start to change the meaning of architectural elements.

A study in 2020 suggests that the majority of virtual reality applications rely on audiovisual stimuli only and refrain from other sensorial factors. This consistent survey of the available literature on multisensory VR and the impact of olfactory, taste, and haptic top over ordinary VR shows the impact on the users. The study also concluded that smell and taste are still underexplored (Wohlgenannt, Simons and Stieglitz, 2020), however recent technologies in 2022 shows new tools that have olfactory virtual realities. In addition, recent haptic suites are interactive with sophisticated interactive systems.

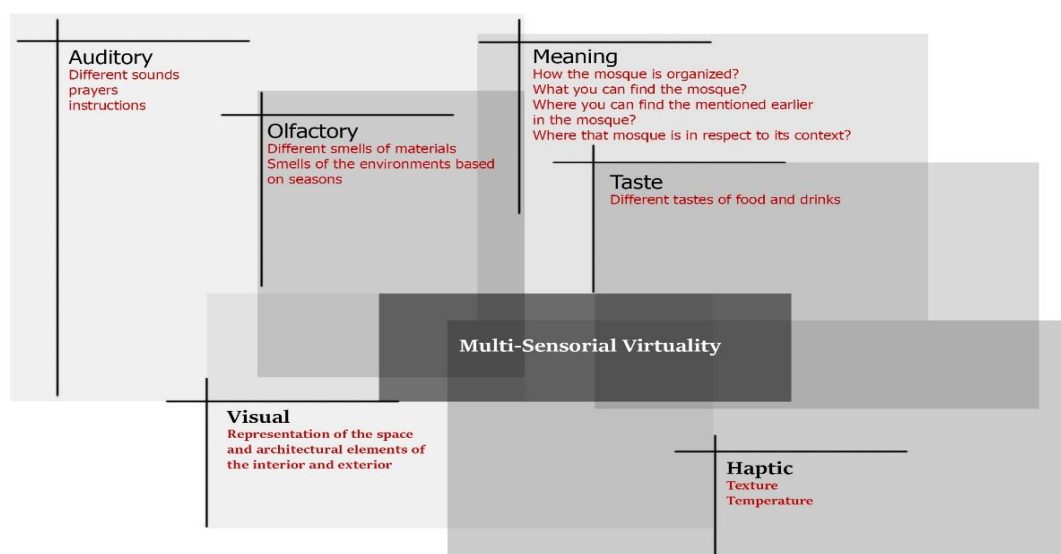


Figure 2 Multi-Sensorial Virtuality (after the researcher).

CONCEPTUAL FRAMEWORK AND METHODOLOGY

IPA is used in this study to reveal the essence of architectural space in the mosques and answer the question of the reality of architectural space. Ontologically speaking the nature of reality here is the question (what is reality) to answer the question a constructivist ontological position is used. In this position, it should always be in mind that the reality in its nature is continuously changing (Chowdhury, 2019). After understanding the essence of this reality it would be only logical to examine and apply the contemporary technologies of virtual realities.

SAMPLING

A purposive sampling of experts in architecture 10 men and 3 women with degrees of architecture ranging from Master's Degree to full professors. All are Alexandrian architects and were asked about their opinion towards architectural space of some mosques. The mosques were chosen according to their date of construction as follows: 2 from the 16th and 17th centuries, 2 from the 18th century, 2 from the 19th century, and 2 from the 20th and 21st centuries. The buildings are listed in Alexandria. Only one interviewee was Director of Photography. The average age was 48 years. Almost 46 % of the interviewees were full professors of architecture, 15% Assistant Professors, 15% PhDs, 15 Master's degrees, and 1 participant with a Bachelor's degree in art. Inclusion criteria were (a) Higher degree of architectural education, (b) practicing the architectural profession, and (c) teaching experience in architecture.

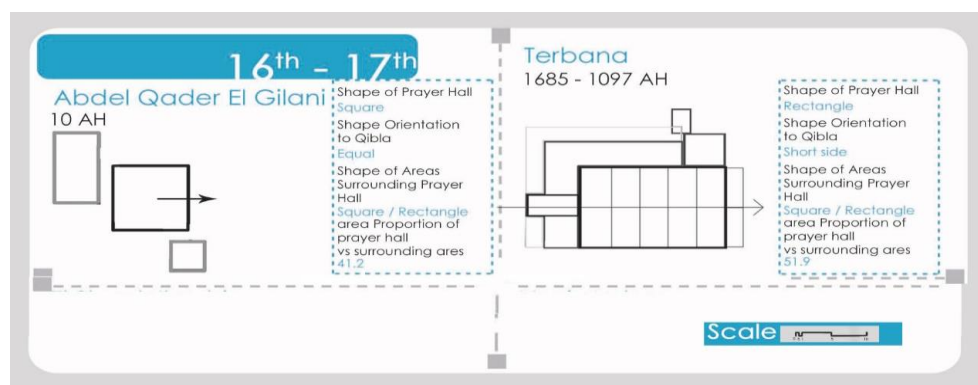
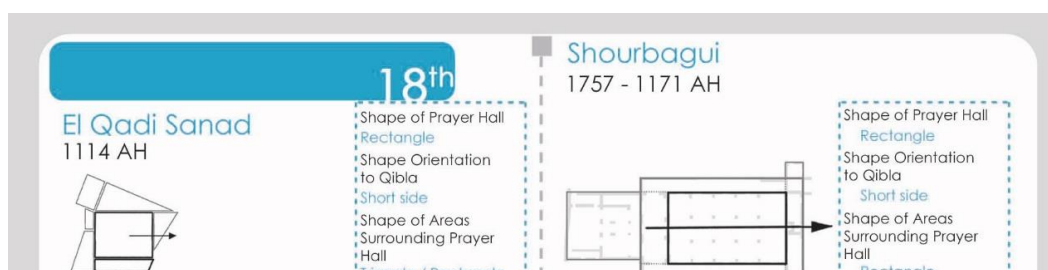


Figure 3 Two mosques from late 16th and early 17th centuries with parti of the building investigated (After the researcher)



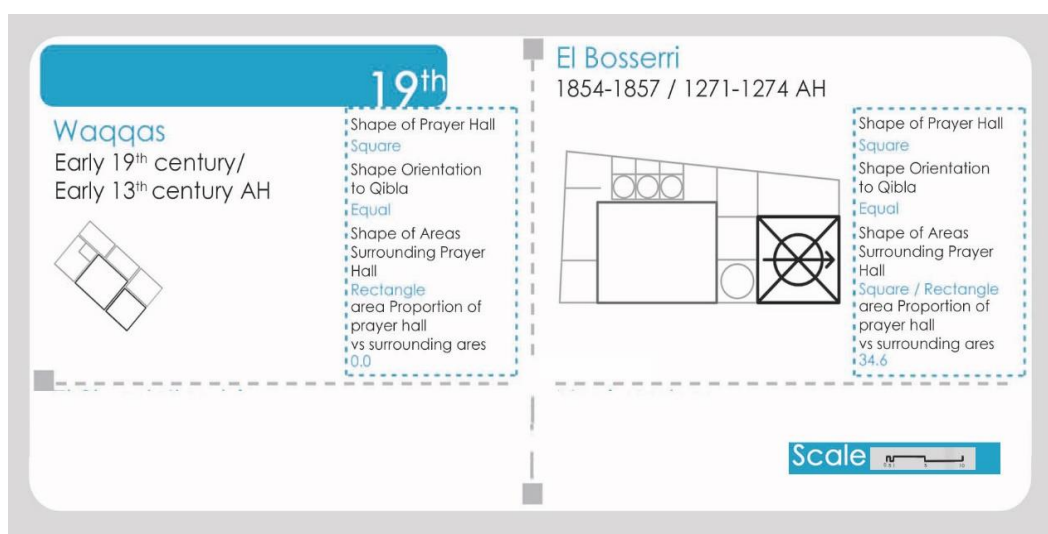


Figure 5 Two mosques from the 19th century with parti of the building investigated (After the researcher).

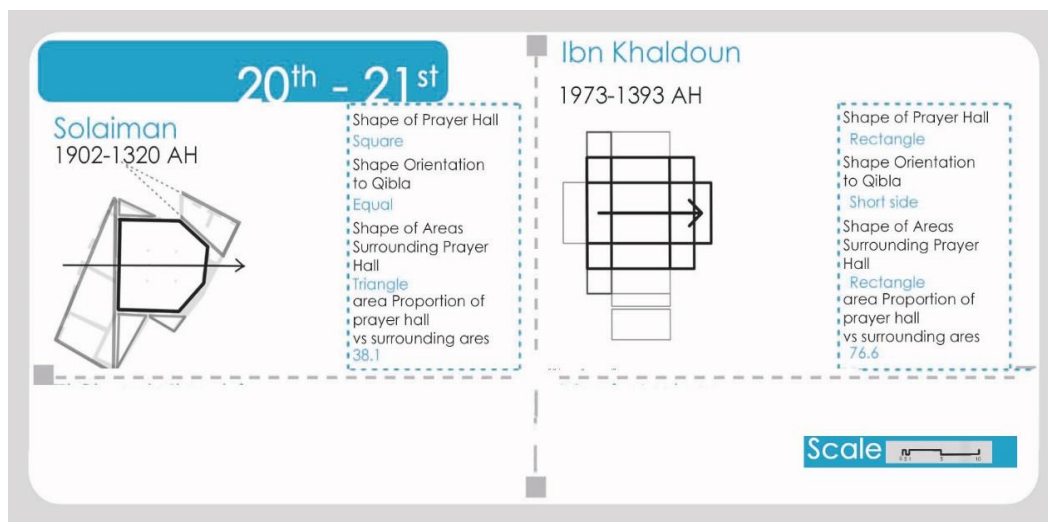


Figure 6 Two mosques from the 20th century with parti of the building investigated (After the researcher).

PROCEDURES

Phenomenological study describes the shared meaning for several people regarding their experiences of a certain phenomenon. The focus is to describe what all participants have in common as they experience a phenomenon. The purpose of phenomenology is to reduce individual experiences with a phenomenon to a description of the universal essence. To this end, qualitative researchers identify a phenomenon. The researcher then collects data from persons who have experienced the phenomenon and developed a composite description of the phenomenon (Creswell, 2013). After which the research will proceed with IPA interpretative phenomenological analysis which is adopted after the Van Manen method (Manen, 1990) and its adaptation by (Pincombe *et al.*, 2016).

Table 1 The seven steps of IPA adopted after (Pincombe *et al.*, 2016).

| Stage | Activity | Action |
|-------|---|--|
| 1 | Reading and re-reading the interview transcription | Preparing significant statements from the interviews and all collected data |
| 2 | Initial noting | Exploring the transcript and formulating meaning blocks |
| 3 | Developing emerging themes | Identifying meaning blocks from significant statements |
| 4 | Structuring the analysis and searching for connections across emergent themes | Cluster the themes and study their interrelations and try to deduce the essence |
| 5 | Moving to the next case | Preparing the results with themes and trying to bracket previous themes |
| 6 | Construction of a cohesive narrative and looking for patterns across cases | The interpretation of essence and significant themes from the results using finding patterns across cases. |
| 7 | Take interpretation to a deeper level | Deepening the analysis and extracting the essence of the study. |

The following interview protocol was used on 13 different individuals to describe their experience with mosque building architectural space with the 8 mosques.

Table 2 Interview protocol for the study (After the researcher).

| Interview protocol: Mosque building, a novel phenomenological approach in conservation and construction. |
|---|
| 1- Do you find that different times of the day change your sensation of the space in the mosque? (Yes /no) (Why- How?) |
| 2- Does light intensity affect your sensation of space in the mosque? (Yes /no) (How?) |
| 3- If you smell different odors in the architectural space, does it change your sensation of space in the mosque? (Yes/no?) |
| 4- Do different sounds affect your sensation of space in the mosque? (Yes /no) (|
| 5- Does the temperature of the space of the mosque vary from outside to inside? (Yes/no) (Does it change your experience? (Yes/no) (How?)). |
| 6- Do you feel different tactile patterns in the architectural space of the mosque? (Yes/no) |
| 7- Do the proportions and the scale of the space in the mosque create a different meaning for you? (Yes/no) |
| 8- Does any of the following terms affect your understanding of space in the mosque: physicality- functionality- cultural message- transcendental from one space to another? (Yes/no) |
| 9- Does your cultural experience (architectural training) affects what you memorize from an architectural space of the mosque? (Yes/no) |
| 10- Does your memory of the same architectural space of the mosque differ from your childhood to the present time? (Yes/no) |
| 11- Does your emotions during encoding your memory of the space of the mosque create a difference (Yes/no) |
| 12- Does your personal experience affects your episodic memory of space (Yes/no) |
| 13- Does your interest leads to different focal points in memorizing the architectural space of the mosque? (Yes/no) |

RESULTS

From 13 verbatim transcripts, 70 significant statements were extracted. After analysis of the formulated meaning blocks, 6 main themes emerged. Table 3 shows an example of the significant statements and the meaning block formulated by them on the first theme of time.

Theme 1 Time the true module of architectural space. Time appeared in the interviews in three ways; the first was neglected and has no effect on architectural space, the second is the time associated with other bodily or objective parameters of architectural space, third was the durational time that the activity takes place in the space. A fourth aspect of time that did not appear but was concluded is the historical time which is the basic absolute determinant of value in architectural space. These parameters of that theme yet did not reveal its essence which is that time is the modular system that links all human senses, emotions, memories, meanings, and experiences together.

Table 3 Example of Significant statements and formulated meaning blocks (after the researcher)

| Code | Significant statements | Formulated meaning blocks |
|------|--|--|
| q1-1 | It affects the natural variables and phenomena associated with time such as the natural cycles (day-night cycle) (cold-hot) and gives all the associations with the rhythm of the day. | Interviewees related time-associated phenomena such as natural cycles of night and day and human biological cycles rather than objective time in itself. |
| q1-2 | Time is also related to the physiological state of the user for example stressed- relaxed, it is also related to the circadian or biological rhythm in the human body such as (alert- sleepy). | There are direct relations between memory and experience created in the architectural space with the duration or the amount of time spent in the space. |
| q1-3 | Temporality affects the activities and functions carried in the space also our preconception of how the space is used, and this also appears if the space is crowded or empty. | |

| | | |
|------|--|--|
| q1-4 | The amount of time spent in space makes a difference in all aspects such as memory experience sensation meaning. | |
|------|--|--|

Theme2 Human senses post the supremacy of vision. In this theme, other determinants of bodily architectural space were determined. If one has to arrange the significance of senses to architectural space according to the responses of the interviewees the following is the result; senses of hearing will be first followed by the sense of vision, then the sense of smell, then the sense of temperature, then the sense of tactility. Each of these senses has different nature between surround and focal, hence affecting the user in the architectural space and his ability to assess the value of architectural space and its reality. Each of the mentioned senses has a threshold that varies from comfort to the point that the user will be forced to leave the architectural space except for the sense of vision.

Theme 3 Meaning and judgment. The meaning of architectural space is a purely bodily phenomenal parameter that is embedded in the mind of the observer and affects the value of architectural space accordingly. It is related to emotions and memory and experience in such a way that it is contentiously changing in a causality relation to them. After the senses convey the architectural space to the observer's mind meaning becomes fundamental. It is affected in this sense and keeps on changing according to interactions with other parameters.

Theme 4 Memory and the Formulation of Architectural space. Memory is a bodily phenomenal parameter that has a mutual interactive nature and effect on architectural space. Also, as mentioned in the previous theme it is interactive with meaning and other parameters. Memory also affects the senses and their judgment of them.

Theme 5 Emotions and architectural space. Emotions and the creation of memory is a bodily phenomenal parameter of architectural space that has an interactive effect between emotions, memory, and architectural space. Interviewees reported that there is always a degree of appreciation of the architectural space regardless of the emotions of the user during encoding the memory of such a space. However, emotions affect their assessment of architectural space.

Theme 6 Experience is a bodily phenomenal parameter of architectural space, personal experience affects the creation of memory in the architectural space. The interviewees

reported that across their lifetime their appreciation of architectural space changes and therefore changes how they create new memories of the architectural space. Experience then is one of the phenomenal parameters of architectural space.

DISCUSSION

Experts of architecture were challenged to discuss the reality of the architectural space of mosques. Their answers varied in 6 different themes. The process of bracketing the interviews of the participants revealed that their experiences of the mosque building were not only visual but, multi-sensorial experience. This study suggests that interactive and/or immersive machine-based experiences that control the following parameters: light-temperature- humidity – sounds- smell- haptics- visual attributes, can be used to mimic or alter the individual's experience in such mosques buildings. The use of virtual or augmented realities to exceed vision may change the architecture of 21st-century architecture. In this essence multi-sensorial virtuality can be used to have an adaptive mosque building architecture.

The meaning of the building is transcends human senses to human perception and understanding. Being subjective, the meaning is constructed within the human mind based on the information carried by perceptual experiences (Vitiello, 2020). Architectural meaning can be described on different levels. The first refers to the physical structure of the building, the second relates to the functionality of the building, the third refers to the cultural message, and the last relates to transcendental meaning. The last two levels can only be measured subjectively by the researcher (Suprpti and Iskandar, 2020). However, the first two can be described using objective measures that can be taken to unveil the meaning of the building. It briefly reveals the design intentions of the requisites to solve the problem (Florio and Mateus, 2020).

The mosques were chosen to identify parti and architectural meaning for this study. They were chosen for their shared religious and social values. Besides, they stand through time and are being used by a diverse pool of users. Eight mosques have been investigated for parti. They were classified chronologically into four categories from the 16th century to the 21st. Special care was taken to the different sizes of the building in each time category. The meaning of mosque building was not largely different from one another. They remained retaining the same logic of space for five centuries. However, their logic of space varied from

one to the other. Moreover, the interviews explained that the meaning of each building varies due to the subjective experience of each person. It was also confirmed that the cultural and religious values were consistent with each individual. It is the difference in the logic space that is the major difference.

Another significant subjective parameter was the memory of the building. There is a quite interrelated relationship between the meaning and the memory of the building. The two are suggested to be dependent on each other if not defining each other. However, memory as a term is defined as the ability to recall experiences, information, and people, and it is a collective system to recall data to leave the person with a coherent story of the events so that at its core it is the transformation of information and meaning into an experience employing interpretation and perception (Vats, 2017).

The formation of architectural memory is a significant for this study. Therefore, understanding the factors that affect encoding memory has been investigated, and based on a study on the impact of architecture on forming personal memories and applying these factors to the case of the mosques in Alexandria the following factors were deduced. Firstly, culture and environment that appear in the behavior of people sharing the same culture and the built environment have close reactions to their mosques. It is not only in the logic or the scale or any architectural treat but also odors sounds and tastes of foods that are correlated to these buildings. Secondly, the scale of the person that is engaged in the encoding process of meaning and memory varies from child to adult. Thirdly the emotions while encoding the memory. The strong emotions involved in performing rituals in the mosques directly affect the memory encoded and recorded.

VALIDATION

To establish rigor in this study the research took the following procedures to validate the study; first, the researcher was immersed through prolonged engagement and persistent observation in the field, second, he applied triangulation using multiple and different sources, methods, investigators, and theories to provide corroborating evidence, and third by Applying

a face validity procedure with the help of a jury panel of three professors of architecture who peer-reviewed the interviews and the instruments that have been used in this study.

CONCLUSION

The phenomenological approach is more holistic as far as the human sensorial system and human cognition are concerned in studding architectural space. It suggests that new means of “multi-sensorial virtuality” construction must challenge the full set of human senses. Not, only in a tangible and physical form but also in a virtual or augmented form via new technologies. The study recommends that new technologies are to be invented to simulate multiple sensorial virtualities such as smell, haptics, sound, and temperature.

Also, the meaning of space should be re-established based on spatial characteristics, order, and logic of architectural space. The memory which was proven to be a correlated parameter to meaning is also a significant factor that needs to be challenged in both new constructions and conservation endeavors. In its subjectivity, a need for computer-generated interactive parallel realities needs to be investigated. It is the notion of multiple realities in the same vicinity or architectural space that is the future of architecture. Architecture in that essence may not be a conventional tangible building but, “computer-generated senses” that develop sensorial experiences that generate meanings to the human mind. Finally, time as an outer parameter of architectural space is the module of which all other parameters of architectural space is based.

RECOMMENDATION FOR FUTURE RESEARCH

This study suggests that a phenomenal architectural space has a continuously varying essence, hence, to evaluate this essence on a major scale of users the study needs to be applied to a larger number of users in real-time. To achieve this software should be developed to assess users’ interaction with architectural space using their mobile phones. Also, short questionnaires that are fed to an AI system that ask the users only one question at a time to be applied can be used. This can measure the value of different parameters that constitute architectural space, and suggest value and understanding of what is real.

REFERENCES

Chowdhury, R. 2019. Embarking on Research in the Social Sciences: Understanding the

Foundational Concepts. VNU Journal of Foreign Studies, 35(1).

Creswell, J. W. 2013. Qualitative inquiry and research design. Third edit. London: SAGE.

Fast-Berglund, Å., Gong, L. and Li, D. 2018. Testing and validating Extended Reality (xR) technologies in manufacturing, *Procedia Manufacturing*, 25, pp. 31–38.

Florio, W. and Mateus, R. P. 2020. ‘Design strategies to define the architectural parti during problem solving | Estratégias de projeto para definir o partido arquitetônico durante a solução de problemas’, *Oculum Ensaios*, 17(June), p. 1.

Gallagher, S. (2010). Merleau-Ponty’s Phenomenology of Perception, *Topoi*, 29(2), pp. 183–

Heidegger, M. 1924. Being and Time. first. Edited by E. R. John Macquairrie. London: SCM Press limited.

HOPP, W. (2008). Husserl on Sensation, Perception, and Interpretation, *Canadian Journal of Philosophy*, 38(2), pp. 219–245.

Leaman, A. and Buildings, U. 2018. ‘hillier-et-al-1976 Space Syntax’, (January 1976).

Manen, M. Van 1990. Researching Lived Experience: human science for an action sensitive pedagogy. 1st edn, State University of New York Press. 1st edn. New york: The State University of New York.

Pallasmaa, J. 2012. The Eyes of the Skin. 3rd ed. New York, NY: John Wiley & Sons.

Pincombe, S. et al. 2016. Making sense of participant experiences: Inter-pretative phenomenological analysis in midwifery research, *International Journal of Doctoral Studies*, 11, pp. 205–216.

Samalavičius, A. 2012. Spirit of place in the Christian Norberg-Schulz’ phenomenology of architecture’, *Logos (Lithuania)*, (71), pp. 119–126.

Suprapti, A. and Iskandar, I. 2020. Reading meaning of architectural work in a living heritage’, *IOP Conference Series: Earth and Environmental Science*, 402(1).

Tamari, T. 2017. The Phenomenology of Architecture: A Short Introduction to Juhani Pallasmaa, *Body and Society*, 23(1), pp. 91–95.

Üngür, E. 2011. Space: The undefinable space of architecture’, *Theory for the Sake of the*

Theory: ARCHTHEO '11, (November), p. 132.

Vats, S. 2017. Impact of Architecture on Human Psychology, (June). Available at:
<https://medium.com/@srkshivangi.01/impact-of-architecture-on-human-psychology-f0b637714603>.

Vitiello, G. 2020. Matter, mind and consciousness: From information to meaning', *Journal of Integrative Neuroscience*, 19(4), pp. 701–709.

Wohlgenannt, I., Simons, A. and Stieglitz, S. 2020. Virtual Reality, *Business and Information Systems Engineering*, 62(5), pp. 455–461.