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**THE PHENOMENOLOGY OF PERCEPTION:
UNFOLDING THE VISUAL EXPERIENCE
OF SPACE**

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Master's Thesis

Supervisor

Asst. Prof. Dr. Çağda ÖZBAKİ

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DEDICATION

To Lana whom this thesis could not have been completed without. Lana, my admired one, both as an academic and a sister, she has always been the moon of life, the only light source that, in many cases, was the only way I could see life through.

To my beloved instructor and educator Asst. Prof. Dr. Çağda Özbaki who stood by me the whole time during my academic years and taught me that asking questions is way much more important than giving answers. Her company enriched, and still is enriching, my knowledge. To her I dedicate this thesis, hoping one day I will be as experienced as her.

To my father and mother, who never stopped encouraging me to reach my goals and always believed in me. Mom and dad, who raised me up the best way they could, and still, after 23 years, I seek their advice and wisdom.

ABSTRACT

THE PHENOMENOLOGY OF PERCEPTION: UNFOLDING THE VISUAL EXPERIENCE OF SPACE

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After a brief overview of the experience of space in architecture, this thesis initially addresses the interconnectedness between human senses and architectural space and the influence of that relationship on our everyday life activities. It further explores the vital concepts to nuance the misunderstood visual experience of space by challenging the arbitrary prioritization of vision in architecture, and the dominance of visually-based techniques in a digitally-driven era. By questioning concepts like ocularcentrism, and by exploring non-visual architectural terms, such as aural space, and the experiences of sightless individuals, the research seeks to establish a more comprehensive understanding of spatial interactions involving all human senses. Aiming to fill the gap in architectural scholarship, this research emphasizes the significance of understanding and experiencing space beyond mathematical measurements, using a phenomenological lens. The research adopts a qualitative approach to explore the subjective and experiential aspects of architectural design. By delving into architectural phenomenology, the study analyzes individual perceptions, consciousness, and bodily experiences to gain a holistic understanding of space.

The main objective of this study is to contribute to a nuanced understanding of spatial experience, informing architects about the diverse ways individuals interact with architectural spaces. It advocates for a more inclusive approach to design that considers all

human senses, fostering environments that enhance well-being, functionality, and cultural alignment. The study encourages a reevaluation of architectural concepts inherited from the past, particularly the relevance of ocularcentrism in the context of contemporary design practices.

Keywords: Experience of Space, Phenomenology, Hierarchy of Human Senses, Ocularcentrism, Sight, Aural Space, Genius Loci.



TABLE OF CONTENTS

	<u>Pages</u>
ABSTRACT	vi
LIST OF TABLES.....	ix
LIST OF FIGURES.....	x
1. INTRODUCTION	1
1.1 AIM OF THE STUDY	3
1.2 SCOPE OF THE STUDY	3
1.3 RESEARCH QUESTION.....	4
2. LITERATURE REVIEW	6
2.1 HISTORY OF SPACE IN ARCHITECTURE.....	6
2.2 THE NEED FOR SPACE.....	9
2.3 THE RELATIONSHIP BETWEEN SPACE AND PLACE	11
2.4 BODY AND SPACE.....	14
2.5 SENSES AND SPACE DURING RENAISSANCE, MODERNISM, AND POSTMODERNISM	19
2.6 OCULARCENTRISM.....	25
3. METHODOLOGY	28
3.1 PHENOMENOLOGY	28
3.2 PHENOMENOLOGY IN ARCHITECTURE.....	29
4. SENSES AND SPACE	37
4.1 THE MECHANICAL EYE AND SPACE	38
4.2 SIGHT-LESS ARCHITECTURE (SPACE AND PLACE FOR VISIONLESS PEOPLE)	40
4.3 AURAL ARCHITECTURE	43
4.4 ARCHITECTURE WITHOUT WALLS.....	48
5. CONCLUSIONS.....	50
REFERENCES	59

LIST OF TABLES

Pages

Table 2.1: The Definition of Space in Different Eras..... **11**



LIST OF FIGURES

	<u>Pages</u>
Figure 2.1: Illustrations of Leland. M. Roth’s Types of Space	8
Figure 2.2: Maslow’s Pyramid of Needs	12
Figure 2.3: Paintings of The Andalusian Cave of Ardales (NPR, 2018)	15
Figure 2.4: (Before the Bridge is Constructed All the Natural Elements Have No Connection with The Human Figure).....	16
Figure 2.5: (Only After the Bridge is Constructed The Two Banks are Identified as Connected Banks. Moreover, All The Natural Elements Will Be Measured By Humans According to their Distance From The Bridge).	17
Figure 2.6:The Relationship Between The Human Body and Visual Space.....	18
Figure 2.7:Palmanova, a Renaissance Star Fort Town in Northeastern Italy (Wikimedia Commons, 2019)	26
Figure 4.1: (Illustration of Visual Space)	46
Figure 4.2: (Illustration of Aural Space)	46

1. INTRODUCTION

Experience of space in architecture is a pivotal topic that has been under the spotlight of the academic literature, for many decades. It has not been only an enduring theme in studies of architecture but also the core focus of urban planners, philosophers, and existentialists (Seamon & Mugerauer, 1985). As a field of study, it has played a major role in bettering the general understanding of the hierarchy of human senses, which has been absurdly topped by sight for a long time. In other words, our arbitrary idea about the ranking of human senses, which can be clearly witnessed in the widespread functionless ornamental design elements, and the abrupt shift toward digitally presented methods of defining space which limits defining space into visual terms only, trapping the experience of space in a solely dimension of visuals, whether witnessed or imagined, must be revisited in a world full of visual distractions.

In this perspective, one can ask if there are different means of experiencing space. as it is evident in the literature reviewed in this thesis, there is a gap in the experience of space via ways other than the visual ones. The aural and the haptic experiences of space are also probable for instance.

Another critical point concluded from the kinds of literature, studied during this research, is that the relationship between humans' bodies, through sensory organs, and space, which is a result of architectural designs, majorly influences our emotions and thoughts, and impacts our daily life activities. Over centuries, the bodily relationship, between humans and space, gradually defined a novel way of being in the world and established a cognitive connection between one's mind, or memory, and the environment surrounding him/her. Exploring the experience of space, which is a multi-sensory action/reaction, requires an understanding of human senses, and how they react to the built environment surrounding them. Such experience varies from one individual to another, for everyone's ways of reacting to their surroundings are not similar. Thus, subjective, and qualitative methods of research are needed when reviewing a personal experience. It is argued by scholars, such as Christian Norberg-Schulz (1979), Juhani Pallasma (1996), and Peter Zumthor (2006), that the best way to explore the experience of space is through a phenomenological lens. And being the most appropriate lens, through which experiencing space can be analyzed, a brief overview of phenomenology has to be our point of departure.

In the early 1900s, a novel philosophical approach emerged, providing thinkers and philosophers with a fresh perspective on perceiving the world based on diverse individual experiences. This approach referred to as phenomenology, had become extensively influential across various domains, including literature, art... etc. by the mid-20th century (Smith, 2013).

In the field of architecture, phenomenology is an approach that concentrates on the subjective and experiential aspects of architectural design. It emphasizes understanding and designing spaces and buildings by considering how they are perceived and experienced by individuals. In this context, phenomenology explores the way people interact with and understand architectural environments through their senses, emotions, and personal experiences.

It is, furthermore, a method that involves the examination of personal subjective experiences from an individual's first-person perspective. In essence, phenomenologists primarily concentrate on individual perceptions and consciousness. Drawing inspiration from Descartes, Edmund Husserl often regarded as the founder of phenomenology, laid the groundwork for understanding the fundamental structure of phenomenological experiences, which greatly influenced renowned thinkers, including Martin Heidegger who merged the experience of space with phenomenology, as well as Maurice Merleau-Ponty, a phenomenological philosopher who explored the impact of human senses on experiencing space.

Thus, exploring the experience of space necessitates a thorough grasp of architectural phenomenology, which will be elaborated upon in this thesis. It involves a holistic understanding of space as a phenomenon, contingent on how individuals interacting with that space perceive it from their own vantage point. Consequently, the most suitable research approach for elucidating this concept is the qualitative method.

The qualitative research methodology can be described as an approach in which researchers build their inquiries upon data obtained from observations, interviews, case studies, surveys, and similar methods. What distinguishes qualitative research is its naturalistic focus, encouraging researchers to scrutinize phenomena in their authentic settings and investigate how individuals naturally interact with them. In an architectural

context, qualitative research can be likened to bricolage, with the researcher taking on the role of a bricoleur.

This entails the customization of a collection of practices to tackle specific challenges within a given context. This methodology suggests that qualitative researchers utilize a diverse range of strategies that are tailored to both the subject of study and the research inquiries at hand (Groat, 2013).

Additionally, a literature review and conceptual analysis will be provided in this thesis. Particularly to elaborate on the significance of the experience of space in architecture and its impact on human emotions, thoughts, and daily life activities. It also emphasizes the need to challenge the predominant focus on visual perception in defining space.

This involves reviewing existing academic literature that targets the observation of space and reaction to it, As well as the analysis of the major concepts and ideas presented in the context. It draws from references to the works of Christian Norberg-Schulz, Mario Carpo, Martin Heidegger, Miriam Helen Hill, and Murray Schafer and discusses the historical and philosophical aspects of the experience of space in architecture.

1.1 AIM OF THE STUDY

Based on this background, this thesis aims to focus on understanding the visual experience of space and exploring different ways of understanding space, such as aural and haptic approaches. By reviewing sightless people's ways of interacting with space, and their bodies-subject techniques, the aim of this research is, also, to delve deeper into the spatial interactions and bodily techniques that involve a blend of all human senses including, but not particularly, sight (Pallasmaa, 1996). Over and above that, drawing attention to the neglected role of the rest of the senses in experiencing space has been a central principle of this research. As well as, discussing the falsification of the hierarchy of human senses in experiencing space and the isolation of human eyes from other sensory organs, and arguing against some of the concepts that define space only in terms of visualities.

1.2 SCOPE OF THE STUDY

Initially, the scope of this study is to shed light on the omitted role of the experience of space that left an undeniable gap in the scholarship of architecture. Filling that gap requires

a special focus on the significance of understanding and experiencing space. Not only in terms of mathematical measurements but also linguistically, culturally, existentially, and phenomenologically. To this extent, the meaning and the need for space are introduced to have a clear introduction of the issue, so that the different means of experience of space can be discussed.

It is noteworthy that the content of the study is limited by the boundaries of the empiricist principles of touching the spirit of space. In other words, to understand the psychological/physical needs for space by examining the role played by human senses in understanding space, requires exploring some understudied, and critical, terms like ocularcentrism, which will be examined by tracing it back to its roots during the Renaissance era.

Such an understanding of space will shed the required light on the physical and psychological link between the human body and artificial/natural space providing an analysis of how individuals perceive and interact with architectural spaces. Studying such experience allows architects to create spaces that evoke emotions, drawing attention to the design elements and building materials employed specifically to target a single sense and, in many cases, neglecting the other four, or five, senses.

This study will, also, demonstrate how the field of space experience allows architects to create designs that align with cultural norms and address the needs of diverse user groups, which will help to find the motivations behind the rise of such ocular concepts back in previous eras and contrast them with the current situation in the 21st century reevaluating the need for these concepts during a completely different era. Additionally, the scope of this research is to raise skeptical ideas regarding digital/virtual presentation techniques of space that can be interacted with through one's eyes only, unlike modeling, for example, which requires the involvement of the designer's body and harmonization of the entire senses with his/her workpiece.

1.3 RESEARCH QUESTION

Perhaps one of the most critical challenges this research faced was the fact that space cannot be ultimately defined. Essentially, it is nearly impossible to question space or put it in a position where its physical-visual presence is a matter of argument. The main question this research puts on the table, however, is how prioritizing one single sense at the expense

of the other deludes us from being in touch with the spirit of the space that we (human beings) occupy.

Furthermore, understanding the relationship between human beings and space requires an overview of the scholarship that targets space in architecture. Thus, it seeks to elucidate the often misconstrued understanding of the different aspects of the interconnectedness between human psychology, sensory organs, and space. Mentioning this interconnectedness naturally raises skepticism about the hierarchy of human senses, exemplified by the interest in pleasing human eyes that has been dominating the field of architecture for a long time, and in order to understand the bodily experience of space. And, as everything around us can only be interacted with via our senses, the question of how the architectural elements of defining space affect our senses is required.

Knowing that it is psychologically and physiologically approved that sight tops our senses in perceiving the world around us, the chapters of this thesis do not aim to argue against this scientific fact, instead, they aim to question the isolation of sight from the rest of our senses, and neglecting the major role played by all our senses together in experiencing space.

Another point this thesis aims to question is the need for ocularcentrism in the 21st century, note that ocularcentrism is a concept that flourished during the Renaissance era, although back in the 14th century, philosophers, thinkers, and architects felt the need to record their research and their predecessors' ideas and reflect upon them, this need led to the rise of visual arts such as perspective drawings and illustrations. The situation in the 21st century, on the other hand, is quite different in terms of recording data and information, and despite that, architects and designers remain stuck in the same loop of producing visual ornaments that do not seem as functional as the ones produced back during the Renaissance.

2. LITERATURE REVIEW

‘Where did something take place?’ or ‘Where your home is?’ are some familiar questions that we humans, as living creatures, intend to answer by thinking of a certain location. ‘where’ is a location-based question that we cannot answer without referring to a certain area or space, without space there will be no place, and nothing in history can possibly occur without taking place (Grange,1985). Space, as a word, can have different meanings as well as different definitions. Thinkers and philosophers, regardless of what their fields of study are, have always thought of, and studied, space as a whole where everything exists. Space is not a void that needs to be filled with solid, but rather, it is where both solid and void meet. Space is where we move, memorize, and imagine.

2.1 HISTORY OF SPACE IN ARCHITECTURE

Linguistically, according to the Etymology Dictionary, “space” has been commonly used to refer to a certain vast land or an empty area, since the 14th century, and it was not until the 20th century, with the rise of the huge advancement of outer space exploration, that space became well-known as what exceeds the atmosphere of Earth. Like most English words, space originally came from Latin, “spatium”, as it literally means “extent” or “room”. And genuinely the German word for space is “Raum” which is vocally similar to “room” in English. Space, therefore, is a room made up for something to exist in. In his masterpiece, *The Book of Tea*, Okakura Kakuzo highlights the reality of a room which, according to him “was to be found in the vacant space enclosed by the roof and walls, not in the roof and walls themselves. In just the same way, the usefulness of a water pitcher dwelt in the emptiness where the water might be put, not in the form of the pitcher or the material out of which it was made.” (Kakuzo 1906: 60).

Aristotle for example sees that space is limited, not infinite, and it only has meaning when the bodies of the world are in motion (Mpantes, 2014). Mathematically according to cartesian logic space is in direct relation with matter, they cannot exist without each other. (Slowik, 1997). Descartes’s space is defined by three real numbers: its coordinates (Luminet, 2017). In other words, space is purely a geometrical unit that can be measured (like area or volume).

Delving deeper into the concept of experience of space requires providing an academic architectural understanding of space as a point of departure. As Nikolaus Pevsner states in his book, *An Outline of European Architecture*: “the history of architecture is primarily a history of man shaping space,” (Pevsner, 1943: 19). Architecture is not about filling a space with buildings and/or furnishing elements but rather defining a space using these elements. When space is defined, a place is created (Tuan, 1977: 3).

Leland M. Roth divides space into four distinct types, the first of which is, physical space that can be imagined as a volume of air contained in between walls, floor, and ceiling (like an empty room). The second type is perceptual space which is the space that can be felt using our five senses by touching or perceiving, this space can extend far beyond the walls that physically limit this space, windows play a significant role in this type.

Conceptual space is the third type, which could be described as the mental map or the memory that is stored in our heads, which allows us to move and navigate through a place. Finally, the last type is behavioral space, the space in which we move and act, the space where we circulate and interact with people and objects around us (Roth, 1993: 9). (See figure 1)

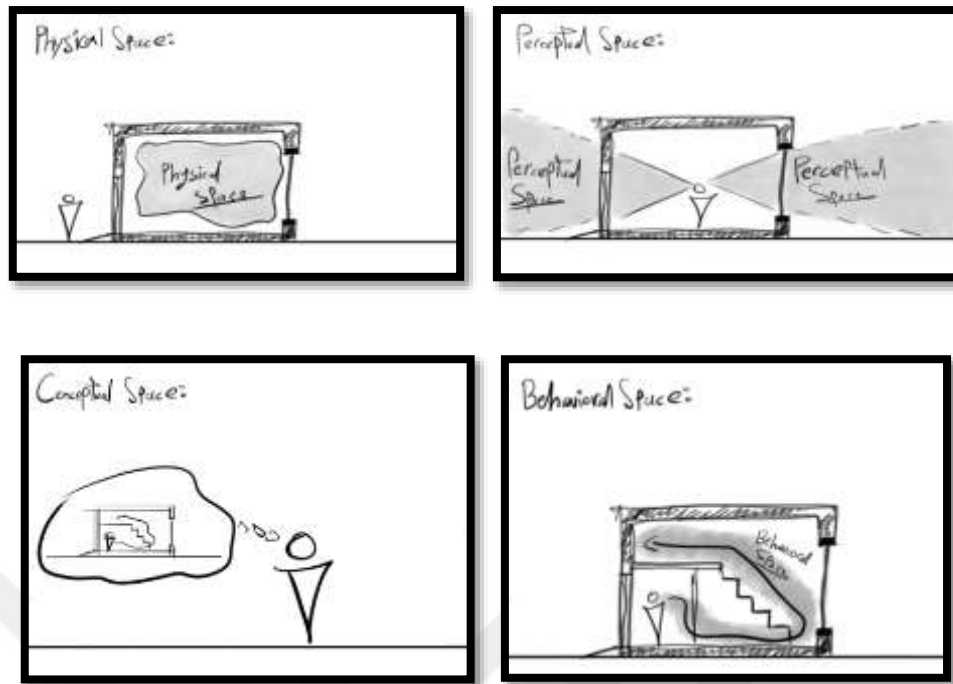


Figure 2.1: Illustrations of Leland M. Roth's Types of Space.

Understanding these four types of space gives us an essential idea of the crucial role played by architects (and even city planners) in shaping and influencing our daily lives, it contributes to the realization of how complicated it is to build a place (whether it is a large residential building or a small bicycle shed).

By the beginning of the 20th century, the French philosopher Henri Lefebvre introduced space as a social product, “a simultaneously political and philosophical project that needs to be understood as such a result of our everyday practices” (Elden, 2007), in other words, it is a philosophical and political project that should be perceived as an outcome arising from our day-to-day actions and behaviors. He further sets a complex and dialectical definition of space that goes beyond simple physical dimensions. He proposes its understanding as a continually developing outcome of an ongoing dialectical interconnection that involves mental space, physical space, and social space (examples respectively given: Cartesian conceptualization, nature, and a product of the perceived, conceived, and lived spaces) (Lefebvre, 2000).

Space for Lefebvre is divided into perceived space, which, according to him, encompasses how individuals subjectively undergo and interpret their spatial experiences, extending beyond the objective and measurable facets of physical space. Secondly conceived space, which is portrayed and conceptualized through diverse methods such as maps, diagrams, and other forms of representation. And, finally, lived space, where he refers to the space of daily life and habitual activities. Lived space encapsulates the social and cultural aspects of space, reflecting how it is inhabited and encountered by individuals. He highlighted that space is more than a passive backdrop; it is actively shaped through social practices, power dynamics, and cultural processes. He underscored the social construction of space, highlighting its reflection of societal structures and ideologies. Furthermore, he explored spatial practices, delineating how individuals and groups utilize and engage with space. These practices are influenced by a complex interplay of social, economic, and political factors, contributing to the ongoing production of space. In his definition of space, Lefebvre introduced a triadic relationship encompassing spatial practice, representations of space, and representational spaces. This triad underscores the dynamic and interconnected nature of spatial phenomena.

2.2 THE NEED FOR SPACE

“Architecture” Ludwig Mies van der Rohe, once said, “is the will of the epoch translated into space” (Ludwig Mies van der Rohe. 1924).

Since the very beginning of the representation of human thinking via symbolic means, architecture has served not only as practical shelter but has also tacitly conveyed humanity's perception of its place in the cosmos, in relation to deities, and among fellow beings. It has artistically embodied their complete social and religious identities, forming the basis of symbolic architecture until the eighteenth and nineteenth centuries (Hodge, 2016).

The impacts of the Industrial Revolution on a society that was superficially created by capitalists have resulted in a programmed everyday life that fits the urban settings. This process led to an expansion of urbanism based on an industrial and social way of defining space.

“The great event of the last few years is that the effects of industrialization on a superficially modified capitalist society of production and property have produced their results: a programmed everyday life in its appropriate urban setting. Such a process was favored by the disintegration of the traditional town and the expansion of urbanism,” (Elden, 2007).

Space has been defined for different purposes and by different techniques throughout history (see Table 2.1). In 1960 Archaeologist Klaus Schmidt discovered what is known as the oldest standing structure to date located in Gobekli Tepe in Urfa, Turkey (Curry, 2008). This structure is believed to be dated back to before recorded history between 9500-8000 BCE during what is known as the pre-pottery neolithic era which is characterized by the shift from nomadic hunter-gatherer societies to settled communities and the development of agriculture (Hirst, 2020). We still do not exactly know what Gobekli Tepe’s ruins are, but as Schmidt pointed out, the prehistoric cemetery-like structure was probably serving as a space to worship (Schmidt in Curry, 2020). As we know from recorded history, and until the second millennium before our common era, worshipping gods was the main idea behind defining space (Hodge, 2016), as in the Megaliths monuments which were founded in many regions all over the world (Patowary, 2010).

Table 2.1: The Definition of Space in Different Eras.

Era	Defining space in architecture as	Based mainly on	According to
Antiquity and gods (5000-1600) BCE	A location where citizens gather to worship.	Religion.	Susie Hodge
The classical world (5th – 3rd) century BCE	evolution of styles from preceding periods (orders).	proportion, harmony, and the use of orders.	Francis D.K. Ching
Eastern Islamic architecture (8th - 13nd) century	A projection of authority in a paradisiacal vision.	Religion, everyday life, and the dry climate.	Leland M. Roth
Gothic architecture (12th - 15th) century	An embodying the religious fervor of the medieval Christian world.	Religion.	Mark M. Jarzombek
The Renaissance (15th -20th) century	A commissioned property for the patrons.	The patronage of art and architecture.	Leland M. Roth
Modernism (1860-1960)	Mass-produced functional machines.	The industrial revolution.	Leland M. Roth
Postmodernism (1960-2000)	A departure from the strict modernist principles.	diversity, eclecticism, and engagement with the complexities of contemporary culture.	Robert Venturi
Digital technologies (2000-	Liquid and dynamic.	the use of digital technologies and computational processes in the design.	Neil Spiller

2.3 THE RELATIONSHIP BETWEEN SPACE AND PLACE

In order for anything to take place a free space is needed. Living creatures, regardless of their intelligence, share the same needs. For instance, unicellular organisms and grown human beings will not be able to survive without eating, sleeping, resting, or being sheltered by a place. However, for intelligent creatures like human beings, building will soon become a habit as they grow up, this will increase their awareness of choice compared to other less intelligent ones.

A person's connection to their surroundings is established through a specific location. Although the location and the space are distinct, they are interconnected. The space represents an unobstructed and unrestricted essence, serving as the purpose for which a location is designated. Exploring the interconnection between a location and its space provides insights into defining the connection between an individual and their environment (Heidegger 1971).

In his paper "A Theory of Human Motivation," published in 1943, Abraham Maslow places shelter in the first level of the hierarchy, under the Physiological Needs category. Where he implicitly stresses the need for protection from the elements and a safe living space. He argues that it is fundamental to address the physiological need for a safe and protected space. Without a secure and stable shelter, individuals may struggle to satisfy their basic survival requirements (see Figure 2.2).

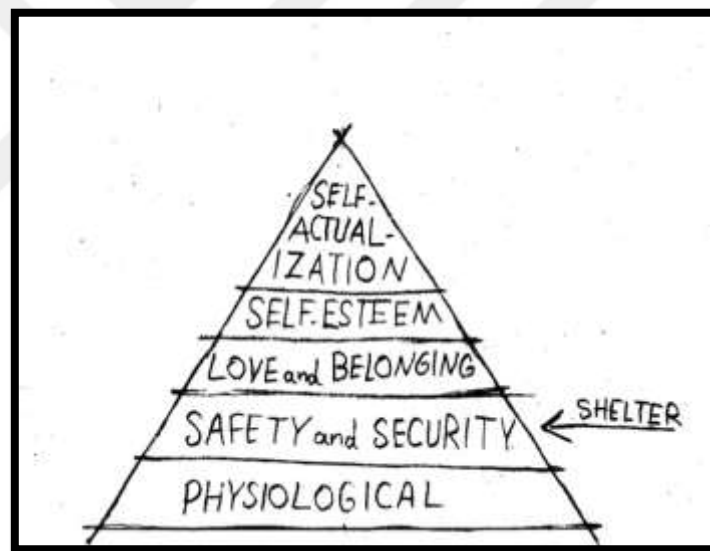


Figure 2.2: Maslow's Pyramid of Needs.

The human need for space is not just a need to fill voids with solids, this need extends beyond geographical boundaries, in fact, even ideas need mental space. If you need to exist as an idea, you need a space. To think of anything first we must think of a space, and in many cases, the space we think of is not real.

When we look at a high mountain without knowing what lies on the other side, it is unavoidable for our minds to start imagining whether there is a valley, a river, or any other space that is referred to as mythical space. Myths have played an important role in

connecting people to their cultural heritage, they create a sense of belonging in which people pass mythical stories from one generation to another even though they lack the evidence to prove any of them.

Until this very day, humans believe in the existence of mythical spaces such as Paradise or Hell, the same way they used to believe in the Northwest Passage or the Isles of the Blest (Tuan,1977). To think of the belief in mythical space is not a result of how little we know about the geographical characteristics of Earth, but a need to continually wonder where everything exists and, sometimes, does not exist.

Practically, the need for space is a necessity for living creatures and that is evident in the process of building shelters. However, building a shelter only embodies the need for space through shaping different building materials and techniques. As human beings are categorized as highly intelligent mammals, they can observe other living creatures and try to analyze their daily life routines, in order to explore how they can survive among other animals. However, unlike other mammals, human beings do not carry their equipment as parts of their bodies, like how lions and other wild animals carry on their claws and teeth for tearing out their prey, or how a rabbit carries paws that can dig with them. (Childe, 1942) and that is when humans started to realize the need to make tools.

“Man’s stock of tools marks out the stages of civilizations,” (Le Corbusier, 1923). Shelters, as argued by many architects, like Le Corbusier for instance, are tools. And just like the rest of humans’ tools, shelters are inspired by the other living creatures’ tools. It is worth noting that human characteristics of mimicking other creatures must not be mistaken for their need to be in space which historically predates their ability to build.

Humans have always tried to develop new tools to help them carry out a certain function, and as soon as the usage of a specific tool spreads among a certain nation, this tool becomes an essential assistant and starts to give its holder essential freedom.

Once one starts using a tool to articulate his/her thoughts or emotions, a sense of attachment develops. This phenomenon is akin to an author’s connection with a pencil. Throughout history, the introduction of various tools has provided humans with diverse avenues for expressing their feelings, particularly evident in the realms of architecture and art. The methods of expression vary from one civilization to another based on the distinct

tools and materials employed. Consequently, each nation forges a unique identity through its chosen modes of expression, creating a lasting legacy.

Sculptures and paintings have played an important role in shaping the identity of the place that are placed in, and as time passes by, they become a whole with it. For example, one cannot think of the Sistine Chapel without mentally picturing Michelangelo's ceiling painting. The art of Michelangelo harmonized throughout the years with the ceiling of the chapel and became more than a way of expression for an artist, but rather an important element that impacted the spirit of this place.

2.4 BODY AND SPACE

"Architecture is what nature cannot make" Louis I. Kahn. Stating a clear definition of space has always been a critical task for scholars. In the light of the previous linguistic and philosophic definitions, however, we can sense the strong relation between space and place, where space is freedom and vast, and place is security and home (Tuan, 1977). Therefore, for architects and city planners, defining the relationship between space and place (or creating a room for place) has been the core of their studies (whether practically or theoretically).

Place is a concrete term that represents the tangible aspect of the environment, constituting a vital element of existence. It transcends being merely an abstract location; instead, it embodies a comprehensive phenomenon. Attempting to reduce it to individual properties, such as spatial relationships, risks obscuring its inherent concrete essence," (Schulz, 1979).

"Habit," Yi-fu-Tuan says, "dulls the mind so that a man builds with little more awareness of choice than does an animal that constructs instinctively," (Tuan, 1977: 102). Having said that animals and single-celled organisms construct and inhabit their places, the best case in point to exemplify this is human beings.

In fact, the Neanderthals, among all cultures and civilizations throughout history, are one of the most interesting species to exemplify that. The Neanderthals are an extinct species or subspecies of archaic humans who lived in Eurasia until about 40,000 years ago (Little, 2021), and are known nowadays as cavemen. The case of archaic humans can be employed here, as the first discovered pre-historic cave painting was referred to them in the

Andalusian cave of Ardales. Unfortunately, we lack the evidence for clear answers about the story behind these paintings, since even archaeologists could not exactly tell what a Neanderthal man was trying to express (Becky, 2021).

The paintings, however, can be understood as some ladder-like lines (see figure 2.3) as well as some hand stencils, and “the significance of the painting is not to know that Neanderthals could paint, it’s the fact that they were engaging in symbolism,” (Alistair W.G. Pike, 2018).



Figure 2.3: Paintings of The Andalusian Cave of Ardales (NPR, 2018).

And regardless of the meaning of the paintings, one can easily tell that the Neanderthals’ goal in the paintings was not to decorate or to make an artwork, but to personalize their cave. A Neanderthal man must have felt the need to dwell in his cave in such a way that only he was able to understand, and he could not find a better way than applying clay or ochre to his own hands and end up painting across his shelter.

In his book, *Poetry, Language, Thoughts*, Heidegger proposes the case of the bridge, which emphasizes the relationship between the built location and the natural space and how such constructed places can give meaning and identity to the surroundings.

Only an entity that inherently possesses a location can create a space for a site. The location doesn't exist before the bridge. Before the bridge is built, there are undoubtedly multiple positions along the stream that could potentially be filled by something. One of these spots is identified as a location, and this identification is influenced by the presence of the bridge. Therefore, the bridge doesn't initially arrive at a pre-existing location to take

its place; instead, a location emerges into being solely because of the virtue of the bridge (Heidegger, 1971).

The bridge isn't merely a link between pre-existing banks; rather, the banks take on their identity as banks only when the bridge spans the stream. The bridge brings together the earth, shaping the landscape along the stream and guiding its course through the meadows. Consequently, the space facilitated by the bridge encompasses numerous locations, each with varying proximity to or distance from the bridge. However, these places shouldn't be seen merely as points with measurable distances between them; rather, each distance inherently carves out a space.

Thus, even the distance between a space and another is a space itself. The ancient Greek unit for measuring is known as *stadion* which equals 185.4 metres. Etymologically, stadion means an intervening space or interval, from which the English word “stadium” is derived. This shows how even the distance is not only a void that connects two different points, but the distance itself is also an interconnected space. This leads us to understand that nearness and remoteness between men and things can become mere distance, mere intervals of intervening space (see Figures 2.4 and 2.5).

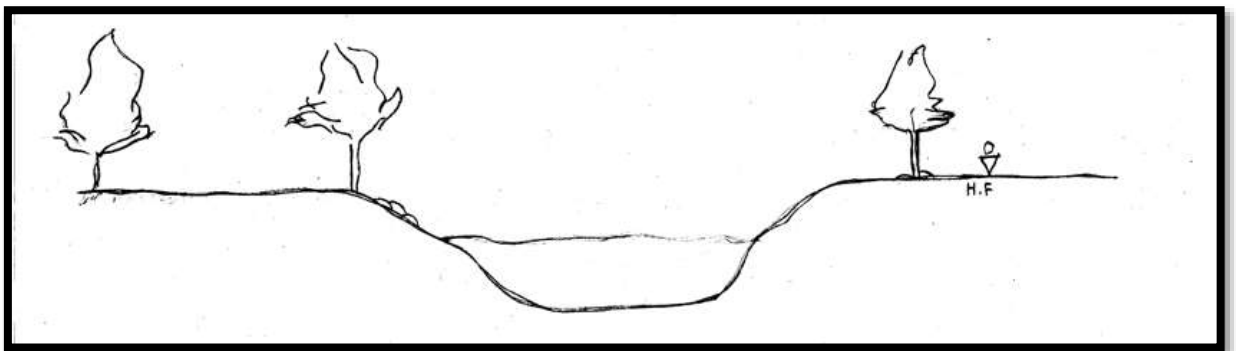


Figure 2.4: (Before the Bridge is Constructed all the Natural Elements Have no Connection with the Human Figure).

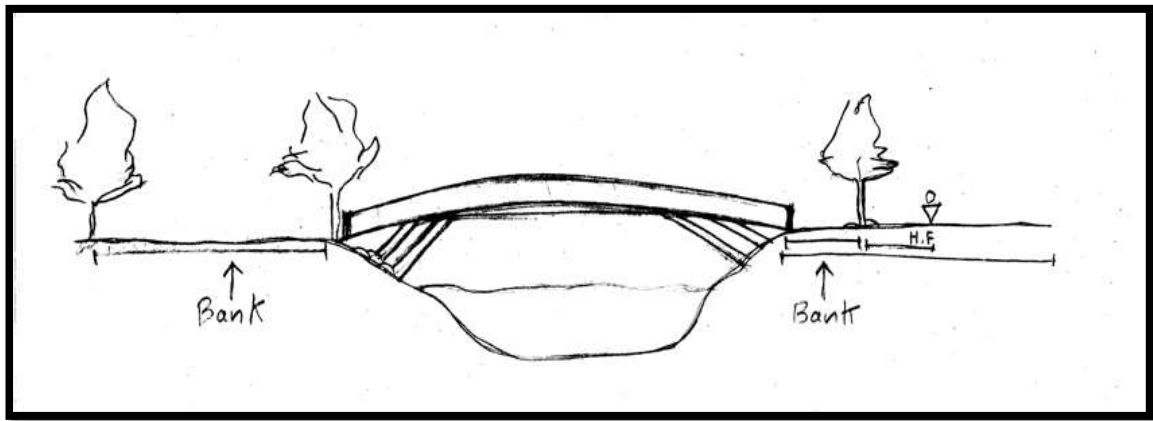


Figure 2.5: (Only After the Bridge is Constructed the Two Banks are Identified as Connected Banks. Moreover, All the Natural Elements Will be Measured by Humans According to Their Distance from the Bridge).

To think of experiencing space is to think of an individual experience, an experience by a single human being, this experience may vary from one to another, however, it can be materialized by understanding the relationship between one's body and its surroundings. Humans dwell in the world through their bodies, and to demonstrate this we first must understand what body and world are.

“Body” or “*bodig*” in old English, etymologically means a physical structure or a material frame, as a word, body conjures up an image of an inactive object that takes up space but is still not necessarily liveable. “World”, however, refers to the place where a human uses his/her body to occupy a small space, he does not only fill it but also inhabits it. World from its roots in Proto-Germanic is a compound of “*wer*” which means man, and “*ald*” or age, in other words, the world is the place where man ages, where he exists, or where he survives by fulfilling his physical and psychological needs.

To speak now of man and the world is to speak of a liveable fleshly body inhabiting the world by dwelling in a space, and as time passes, he dwells by controlling its environment. At first, a human came to the world and dwelt in naturally defined spaces, but soon after he started to command the world and even recreate its spaces in such a way that fit his spatial needs.

Among mammals, the human body stands out due to its effortless ability to maintain an upright posture. In this position, humans are poised for action, with space unfolding before

them, immediately distinguishable into front-back and right-left axes based on their bodily structure. Vertical-horizontal, top-bottom, front-back, and right-left represent bodily positions and coordinates extrapolated onto the surrounding space. During deep sleep, individuals remain influenced by their environment but lose a sense of their world; they exist as bodies occupying space. When awake and upright, they regain a connection with their world, and space is organized in alignment with their corporeal schema. To be in command of space, to feel at home in it, entails that the objective reference points in space, such as landmarks and cardinal positions, align with the intention and coordinates of the human body (Grange, 1985) (see Figure 2.6).

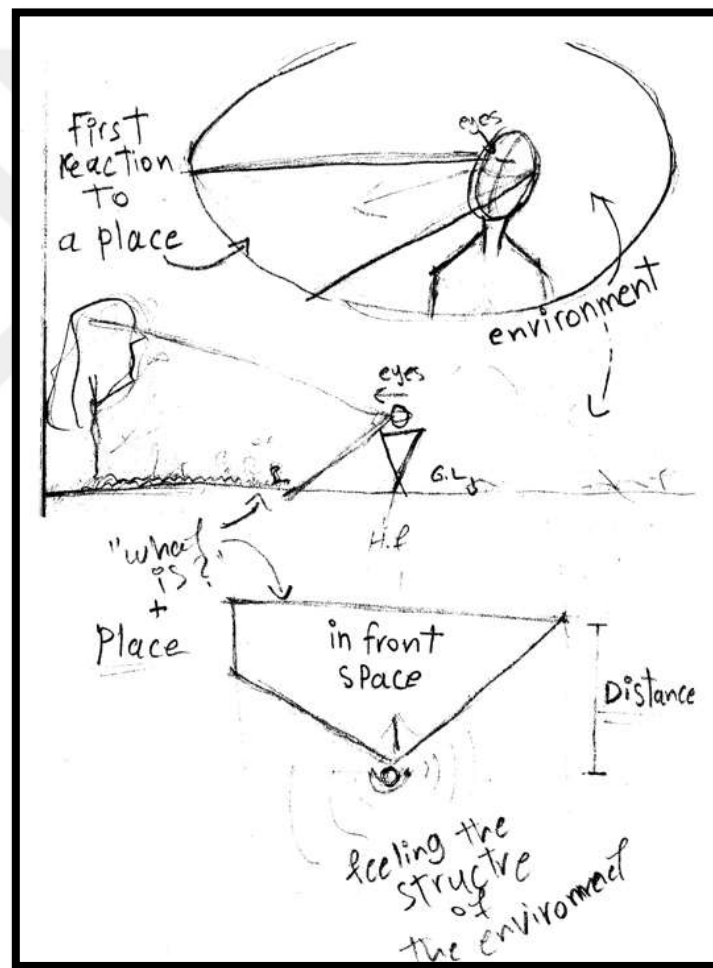


Figure 2.6: The Relationship Between the Human Body and Visual Space.

How does the bodily expression or manifestation occur? It seems that there are four fundamental structures through which our bodies establish a position: posture, orientation, feel, and understanding. These structures act as indicative gestures, illustrating the active,

corporeal essence of our existence. While described individually, they should be comprehended as interconnected, forming the means by which human flesh situates itself within an environment.

Posture establishes our connection with the world, as our backbone orients us to face it directly. Moreover, our eyes are fixed in such a way that the space in front of us holds prominence in our consciousness. The world presents itself before us, capturing our attention, prompting our concern, and inviting or deterring our engagement. The spinal column and ocular arrangement shape our initial response to the place. This leads to a dual and simultaneous reaction: on one hand, the initial perception of 'what is' occurs along the vertical-horizontal axis; simultaneously, 'what is' consistently reveals itself foremost as straight ahead, situated over there, in front of us. Posture introduces us to a place as something distant.

In his *Space and Place*, Yi Fu Tuan argues that, like animals, human beings live in environments of their own construction rather than simply in nature. Against this background, Tuan puts a critically important question on the table. What is the human builder conscious of as he first creates a space and then lives in it? What is the quality of this awareness?

Due to the variety of experiences and awareness involved, the answer to that question might seem complicated. First of all, the builder should have an understanding of the space he is building on, as well as a knowledge of the used material and form. Second comes physical effort. A builder should be physically able to construct a place with an awareness of raising a structure against the pull of gravity. A worker modifies his own body as well as external nature when he creates a world. Completed, the building or architectural complex now stands as an environment capable of affecting the people who live in it. Man-made space can refine human feeling and perception (Tuan, 1977).

2.5 SENSES AND SPACE DURING RENAISSANCE, MODERNISM, AND POSTMODERNISM

During the European Renaissance, spanning approximately from the 14th to the 17th century, architects underwent a significant transformation in their approach to spatial design and experience. While Renaissance architects drew inspiration from the classical

architecture of ancient Greece and Rome, a resurgence of interest in humanism led to a heightened emphasis on the human experience, encompassing the senses. This era marked a distinct shift, witnessing a more sophisticated comprehension and integration of sensory perception into the fabric of architectural design (Scott, 1914).

One of its most important aspects is its concentration on humanism and the individual because, during the Renaissance, humanism underscored the worth and capacities of individuals. This shift in emphasis from the divine to the human prompted architects to take into account the needs and experiences of individuals in their design endeavors. Another aspect is proportion and harmony, Renaissance architects, such as Leon Battista Alberti observed classical texts and ideas on beauty, harmony, and proportion. The quest for perfect proportions in structures sought to establish a feeling of equilibrium and unity, intending to be visually and aesthetically appealing and harmonized with human sensitivities (1973, Wollheim). Over and above, they shed particular light on perspective and visual perception, as the adoption of linear perspective, which was advocated by artists such as Filippo Brunelleschi, emerged as a pivotal element in Renaissance architecture. This method aspired to craft lifelike spatial illusions on flat surfaces, enriching the visual encounter and captivating the sense of sight. Finally, geometry and symbolic representation gained significant attention in Renaissance architecture as designers utilized geometric shapes and symbolism. Shapes and proportions frequently carried symbolic significance, and the deliberate application of geometry was thought to instill a sense of order and beauty that found resonance within the human mind (Johnson, 2005).

These concepts were voiced just during the Renaissance era in Shakespeare's Hamlet:

What a piece of work is man!

How noble in reason!

how infinite in faculty!

In form, in moving, how express and admirable!

In action, how like an angel!

In apprehension, how like a god!

The beauty of the world!

The paragon of animals! (Shakespeare, 1989).

Louis Sullivan is often regarded as the spiritual father of modern American architecture (Abbott, 2000), he rejected the literal reuse of styles and historical architecture, while at the same time observing the crucial lesson of history that the best designs always grow out of a cultural response to function. Sullivan endeavored to formulate a design philosophy uniquely American in its scope, applicable to a wide range of architectural projects. However, his notable achievements predominantly centered on commercial and office structures, with a comparatively limited number of designs for churches and residences.

Sullivan's modernist ideas were a response to a complex set of social, cultural, economic, and technological changes during the late 19th century. Mostly cultural shifts and rejection of historical styles contributed to the rise of modernism in architecture, as modernists rejected ornamentation and historical references of previous architectural styles, such as Gothic, Baroque, and Classical.

Furthermore, this rejection of cultural shifts and historical styles was reflected in the architecture of the 20th century, particularly by the modernist pioneers, led by Le Corbusier. And this could be witnessed in his *Towards a New Architecture*, and is further clearly observant in his statement "A great epoch has begun," "There exists a new spirit," and "There exists a mass of work conceived in the new spirit; it is to be met with particularly in industrial production..." "Architecture is stifled by custom..." and "styles" are a lie"... etc (Le Corbusier, 1923).

The twentieth century witnessed additional complexity due to two global conflicts and two world wars. The unresolved issues from the initial conflict almost inevitably paved the way for the second, prompting the possibility that future historians may characterize the twentieth century as a hundred-year span marked by nearly incessant warfare in some parts of the globe.

The cultural changes following World War I and World War II had a profound impact on the development of modernist ideas. The destructive consequences of the wars sparked a yearning to move away from established conventions and embark on a new beginning.

Architects aligned with modernist principles aimed to construct a fresh and optimistic vision for the future (Ruskin, 1877).

Modernists of that era tended to embrace simplicity and clean lines, moving away from the ornate details of previous styles. This visual clarity aimed to create spaces that were visually straightforward and uncluttered. On another note, the incorporation of large windows and glass walls became prevalent. This not only introduced more natural light into spaces but also allowed for a visual connection between the interior and exterior, blurring the boundaries and creating a sense of openness.

All in all, modernist architecture aimed to engage the human senses more directly and honestly by prioritizing simplicity, functionality, and a harmonious relationship with the surrounding environment. The design principles of this era had a profound impact on how people perceived and interacted with architectural spaces.

Sixty years following the mass production of solid concrete blocks that acted as dwellings and the absence of ornamentation, a book by Robert Venturi (also known as the father of postmodernism), entitled *Complexity and Contradiction in Architecture*, was published in 1966, a book with a significant influence on the rise of what is known as postmodern architecture; a style that defends an eclectic architecture full of colors, signs, and symbols that can communicate cultural values, where all the strict roles of modernism are broken, and all the symmetry, formality, and rigidity of the 1920's buildings are dodged.

In response to Mies van der Rohe's famous "Less is more," Venturi ignited the first spark of his revolution against modernism with his well-known motto "Less is a bore", a quote that echoes everything about the concept of postmodernism. Venturi believed that the utopian ideals of Modernism as a democratic form of accessible architecture for the masses had failed and that its cultural moment had passed. We are not living in an era of elitism anymore, and the machines of living can no longer be called dwellings. The opposition to modernity was the starting point for postmodern architects to build a new world, or what they call a utopia.

The creation of such an ideal place (from an architectural point of view) requires new bases to build on and methodologies to apply. And to the architects of postmodernism, the Euclidean shapes of the 1920s have become old and grey to play a role in the creation of a

utopia, a simple prismatic residential block is not proper anymore, and the involvement of non-standard forms in architecture is a must.

Thus, a new set of materials started to enter the world of architecture to match the non-standard forms of postmodern architecture, materials like titanium can be perfectly used to construct a hyperbolic canopy for instance. Construction using such a material demands new technologies far more advanced than those used by the architects of modernism, and that is when computerized techniques started to emerge in the field of architecture.

In 1984, the American Canadian fiction writer William Gibson published one of his best-selling novels entitled “Neuromancer” in which the events take place in a real-time virtual reality space. Many future thinkers in the field of digital architecture started to put the idea of cyberspace into consideration after Neuromancer (Spiller, 2009).

Neil Spiller was one of the minds that were inspired by Gibson’s novel, he published in 2000 his ‘*Digital Dreams: Architecture and the New Alchemic Technologies*’ book which illustrates the magnificent potential of the upcoming technologies in architecture, and most focused on the architecture of cyberspace characterized by liquidity, harmony, and its non-standard forms (Spiller, 1998).

Neil Spiller was not the only digital architect to describe the architecture of cyberspace by using adjectives like non-standard or liquid, in fact, designing using splines instead of straight lines, curvilinear elements instead of linear ones, and non-Euclidian instead of Euclidean forms can be observed in almost all the projects designed using digital architecture concepts (Mennan, 2008). Such non-standard forms can guide the eye along a particular path or direction, influencing the visual flow within a space. This can create a dynamic and fluid movement, enhancing the overall visual experience.

These anti-modernism characteristics are almost, if not completely, identical to those of postmodernism. Moreover, postmodern architects found that digital tools in architecture can be employed as suitable instruments to continue their legacy in opposing 1920s architecture. Architects like Frank Gehry, for example, could not manage to design his deconstructive postmodern projects without the help of the recent digital techniques, and his Guggenheim Bilbao Museum is known to be a result of digital architecture as a tool only, but not as a revolutionary concept.

To think now of all the transitions that occurred in architecture since the Renaissance era, passing through the revolution of modernism and then the flourish of postmodernism, and until the rise of the digital era, and despite each of the eras criticizing their predecessors, still, the emphasis on vision, as the main way of experiencing space, remained the same.

Take for instance the pioneers of modernism, Le Corbusier believed that architecture is what is seen and measured by the human eyes (Le Corbusier, 1923). Walter Gropius is another case in point that shares the same point of view, he sees that being a designer means adapting the knowledge and learning about the scientific facts of optics.

Postmodern architects kept on emphasising the domination of sight by employing ornamentation, symbolism, and decorative elements, essentially only for aesthetical purposes. The architects and designers of that era believed that those elements were their way to revolutionize the strict, dogmatic set of principles and the rigid, minimalist aesthetics that dominated the discipline in the period between the late 1800s and the 20th century.

The expansion of postmodern architecture in Europe and later in the rest of the world required new ways of defining spaces that oppose the ones adopted by modernists. This was a main factor in coupling digital technologies in the 1990s and the goals of postmodernists. Eventually resulting in the digitalization of architecture. Now the process of digitalizing architecture did not only participate in the field of construction by reducing human labor but also drifted the experience of space away from its origins and locked it up in digital screens. That is when virtual ways of perceiving space became the main tool for presenting it. This resulted in a relationship between sight and digital architecture which is characterized by a symbiotic interplay between advanced visualization techniques, computational design processes, and the transformative capabilities of digital technologies. Architects leverage these tools not only with the aim of enhancing the visual representation of their designs but also to push the boundaries of creativity, customization, and interactivity in the built environment. Digital tools enable architects to create highly detailed and realistic visualizations of their designs. Advanced rendering techniques allow for the creation of lifelike images that simulate how a building or space will appear in the real world.

2.6 OCULARCENTRISM

The invention of writing, around 3400 B.C.E, caused a shift in speech from being vocal or voiced to written (Ong, 1982), this shift changed the medium of communication for humans in which aural space became more visual, and in addition to hearing, people started to receive information and data by looking at letters or texts, this gave sight an advantage over other senses.

The shift from oral to visual in the communication medium, or space that we share our ideas within, had caused, and still causing, an emphasis on sight more than the rest four, or even five senses (five in case we believe in what so-called the sixth sense). And the drift from spoken statements toward written ones built a new way of exchanging ideas or even feelings between each other and the built environment, relaying mostly, if not completely, on what we only see. From radios to televisions, from poetries to movies or photographs, the whole world is measured by how we see it or are being seen by it (Carpo, 1998).

The privilege of sight was much more emphasized by Greek philosophers, like Plato, who believes that humanity's greatest gift is vision (Pallasmaa, 1996), had brought a new metaphysical way of thinking related to sight only, where everything owns its identity only when being looked at (Levin, 1993). Both Aristotle's and Plato's thoughts on vision led to what is known today as ocularcentrism which is a Western perceptual ranking of vision over other senses (Martin, 1988).

In his *Philebus*, Plato expressed his ideas on the ideal geometric forms generated by straight lines and circles, as well as the solids created by these forms in three dimensions. He had been convinced that such forms not only had inherent beauty but were "eternally and absolutely beautiful." Beauty was seen to rest in the careful arrangement of proportionally related parts.

These ideas were revisited again during the Renaissance era, the focus on visual art increased and art was targeting the eyes only, and that is when artists like Michelangelo, Raphael or Leonardo da Vinci prioritized the sense of sight as the primary means of understanding and interpreting the world by exploring the human form, perspective, and light and shadow relationship, this was demonstrated even more by the rise of humanism which placed human as the centre of the universe.

Renaissance architecture was characterized by a return to Classical forms, such as the use of columns, pilasters, and entablatures in building facades. Architects of the period, such as Andrea Palladio and Filippo Brunelleschi, sought to create balanced and proportional buildings that reflected the mathematical principles of Classical architecture (See Figure 2.7).



Figure 2.7: Palmanova, a Renaissance Star Fort Town in Northeastern Italy. (Wikimedia Commons, 2019).

The Renaissance period was also marked by a renewed interest in perspective, which allowed architects to create illusions of depth and space in their designs. All in all, the focus of Renaissance architecture was on the creation of beautiful and harmonious spaces that celebrated the power and beauty of the human form and the natural world.

Although, ocularcenterisism was not fully articulated during the Renaissance era, still, one cannot deny that artists of the Renaissance did contribute to the development of this concept. In architecture, the belief in sight dominance can be clearly seen during the Renaissance Era The revival of classical styles during the 14th century resulted in buildings with too many details and gave more attention to proportional systems to present awe-inspiring and aesthetically pleasing structures.

These ocular-centric thoughts and ideas were carried on during the era of modernism and postmodernism. During the era of modernism, architects maintained the overestimated role of the eyes as the only means of interacting with architectural forms and experiencing space. Despite the obvious modernist rejection of culture and historical architectural techniques, the modernist ways of opposing, rejecting, and revolutionizing architecture were completely based on visual grounds.

This can be also applied to the postmodernists, summed up in Robert Venturi's idea; the lack of detail and visual aesthetics is clearly leading the buildings to become soulless (Venturi, 1966). Contemporary architecture focuses on breaking the brutal rules of modernism and creating a whole new – eclectic identity for a space, regardless of the history of its location or its original identity.

The growing interest in pleasing the eyes reached its peak at the beginning of what is known as the digital era, that is when digital screens took over the medium of communication and became a whole new space known as cyberspace. The cyber space is a virtual, unreal, dimension where our ideas are locked in as data and can be only reached visually.

This isolation of sight and the belief that experiencing space is restricted to the visual field only affects our being in the world in a way that architecture has transformed from being a connection between our whole body and space to a sensory reductive art that exists to satisfy one organ only (Pallasmaa, 1996).

It is psychologically and physiologically approved that sight is the prior to our senses when it comes to perceiving the world, thus, the aim here is never to argue against that scientific fact. Instead, it aims to criticize the separation (or the isolation) of sight from the rest of our senses and the neglect of the major role played by all the human senses, together, in experiencing space.

3. METHODOLOGY

Exploring the experience of space requires a clear understanding of the phenomenology of architecture, a holistic understanding of space as a phenomenon that is based on how the users of that certain space interacted with it (from their own perspective). Thus, the best architectural research method that could help in clarifying the previous point is the qualitative method.

The qualitative research method can be characterized as an approach wherein researchers conduct their investigations using a dataset derived from observations, interviews, case studies, questionnaires, and similar sources. What distinguishes qualitative research is its naturalistic orientation toward the subject matter, guiding researchers to explore phenomena within their authentic settings. This approach involves studying a particular phenomenon by observing how people naturally interact with it (Groat, 2013).

Architecturally, qualitative research is an approach that focuses on understanding the subjective, contextual, and nuanced aspects of the built environment. Unlike quantitative research, which emphasizes measurable data and statistical analysis, qualitative research delves into the underlying meanings, experiences, and perspectives associated with architectural phenomena.

In short, our approach here is qualitative, allowing for an in-depth exploration of the phenomenology of architecture, emphasizing the subjective experiences of users and the nuanced aspects of dwelling in the built environment. The study draws on philosophical concepts and historical perspectives to enrich the understanding of the relationship between humans and the spaces they inhabit.

3.1 PHENOMENOLOGY

By the early 1900s, a new approach in philosophy had risen among thinkers and philosophers giving them a different way to perceive the world according to the different experiences of different individuals, this approach is known as phenomenology, and by the middle of the 20th century, phenomenology was widely spread in many fields, such as literature, art, etc (Smith, 2013).

Phenomenology can be described as a method of analyzing subjective experiences in a first-person perspective by each individual. In other words, phenomenologists focus mainly on personal perceptions and consciousness. Influenced by Descartes, Edmund Husserl known as the founder of phenomenology, established the fundamental structure of phenomenological experience which influenced many famous thinkers, like Martin Heidegger whose ideas played an important role in demonstrating phenomenology, mostly trying to understand space where everything exists in phenomenological basis (Silverman, 1980). Martin Heidegger was a well-known philosopher and a mid-century thinker in the field of phenomenology and existentialism. Heidegger started to acquire a reputation among architects ever since the 1960s, and that is when he introduced both “dwelling” and “building” as a result of one’s consciousness that is mainly connected to place, time, and culture (Lane, 2007).

Moreover, it is an approach that centres on subjective encounters within the constructed environment. It has left its imprint on various disciplines, with architecture being notably influenced. At its core, phenomenology places a focus on the examination of human consciousness and the intricate ways individuals perceive and engage with the surrounding world.

3.2 PHENOMENOLOGY IN ARCHITECTURE

In the architectural context, phenomenology strives to comprehend the qualitative dimensions of the built environment, delving into the sensory, emotional, and spatial dimensions of individuals within a given space. This approach transcends the objective scrutiny of physical structures and delves into the subjective interpretations and interactions that people make with architectural elements.

The different aspects of phenomenology in architecture includes, exploration of subjective experience where phenomenology prompts architects to take into account the unique subjective experiences of users, recognizing that different individuals may perceive and engage with the same space in distinctive ways. Investigation of embodiment in which Phenomenological approaches frequently delve into the connection between the body and the constructed environment, encompassing the impact of bodily movements, senses, and perceptions on the overall experience of space. Temporal consideration as phenomenology

acknowledges the temporal dimension in architectural encounters, contemplating how time shapes our perception of space and influences the unfolding nature of a building's design over time. Exploration of existential and emotional dimensions, where phenomenology deeply probes into the existential and emotional facets of architecture, scrutinizing how buildings and spaces evoke specific feelings, moods, and a sense of place. Emphasis on user-centered Design, Architects employing a phenomenological approach may prioritize defining spaces centered around the user, with the goal of creating environments that enhance the well-being and experience of the individuals who inhabit them. Influence of prominent phenomenologists, as architectural theory and practice have been significantly influenced by prominent phenomenologists such as Maurice Merleau-Ponty and Christen Norberg-Shulz. Architects interested in phenomenology often contemplate the impact of their designs on the lived experiences of those who occupy or interact with the built environment, emphasizing a more comprehensive and human-centered approach to architecture.

It is noteworthy that the findings of this paper are mostly based on a review of a body of architectural scholarship that is centered on the understanding of space and the impact of defined places on humans' psychology, and most crucially, the importance of dwelling as a process.

We attain to dwelling, so it seems, only by means of building. The latter, building, has the former, dwelling, as its goal. Still, not every building is a dwelling. (Heidegger, 1971)

We, humans, can recognize the difference between space and place, inside and outside, dark and light, public and private, even without architectural forms. This knowledge seems to be amorphous without the power of architecture (Tuan, 1977). The kind of power that allows us to enhance the relationship between our senses and the spirit of the place. Regrettably, architects of the twenty-first century deal with space as a void that needs to be filled anyhow, thus, they end up with a place that looks good or fancy, but that is not what we, humans, merely look for in a place. A place is more than an abstract location, a place is a phenomenon, it is a concrete term of the environment (Schulz, 1979).

The aim of a building should not be solely pleasing the eyes, as mentioned before, a human being needs to dwell in his/her place, and dwelling happens when all the sensations,

memories, and behaviors of the inhabitants are coherent with their place, in other words, “the way in which you are and I am, the way in which we humans are on earth is dwelling,” (Heidegger 1971).

Since the 1940s, excavations have been taking place in the Northern Cape Province of South Africa, where Wonderwerk cave is located, this cave is believed to be the oldest home ever for humans. With too much digging left to be done, archaeologists stated that two million years ago *Homo habilis* (an ancient species of humans) took Wonderwerk as their dwelling (Selvin, 2021). To make it clearer, humans had dwelt in caves for approximately two million years, that is 1.9 million years before building the structures in Gobekle Tepe.

The ongoing excavations in Wonderwerk cave showed that humans did not just shelter themselves in naturally made caves, but they also performed art in them, such as rock painting or tool crafting. In other words, dwellers in Wonderwerk made sure to harmonize with the cave by adding their own symbols themselves, a technique very similar to the one used by modern humans in which they add their favorite wallpaper or hang family pictures on walls.

When we look at the symbols on Wonderwerk’s walls it might seem as if the dwellers were trying to keep their daily dairies or to take notes regarding some hunting techniques (Dimri, 2022), in any case, we are not trying to discuss the meaning of those symbols, but to understand them phenomenologically. Even though *Homo habilis* had no knowledge of building, still they felt the need to dwell, and painting symbols was their way of doing it.

Now despite the two million years difference between us and *Homo habilis*, rock painting is a work of art (Clottes, 2022), and art is a way of expressing feelings, this expression can be in many forms (Marder, 2019), building is one of them, architectural design is another, however, we should not mistake building or designing with dwelling in space. And architecture (not architectural design) is the field in which we try to understand how one dwells in space. Dwelling in a space is a need, a priority, building and designing, however, come only when one is ready to dwell (Schulz, 1979). At this point, it is worth mentioning that historically dwelling existed for a long time before building. To be more specific,

dwelling is not an invention like writing or drawing, dwelling in a space is an instinctive need, that cannot be invented but rather explored.

Gobekli Tepe's structures and the megaliths are built structures that can be categorized as a public space for people to gather, however, dwelling is different from building. Building requires collective skills as well as physical strength (Tuan, 1977).

Dwelling is something else, it is the way in which we are on this planet (Heidegger, 1971), a spiritual need, another from building. Since the 1960s and with the rise of postmodernism, architecture has become a work of art that is related to a certain designer or architect, not to users, not to dwellers (Onniboni, 2014). Architects became obsessed with creating unique structures or finding new design languages that opposed those used during modernism. One's home became a fancy piece of art designed using advanced computing techniques, architects do not consider the big difference between dwelling and building, or between architecture and design despite the 1.8 million years difference between them.

Entitled "*Bauen, Wohnen, Denken*" or building, dwelling, thinking, is a lecture that Martin Heidegger first introduced in 1951 during a conference in Darmstadt, Germany, and was later included as a whole chapter in his *Poetry, Language, Thought* in 1971. The main idea of this lecture is to discuss the relationship, as well as the difference between building and dwelling where building for Heidegger is not just about the human ability to construct structures such as roads, buildings, or bridges, it is more than a technical activity, it is how we shape raw materials in a way that can help us to harmonize our minds and bodies with the environment around us. However, while building we distance ourselves from the natural world and create a new way of being in the world.

Dwelling, on the other hand, describes the rootedness that one would feel in a specific location, it involves a deep way of experiencing the environment and its relationship with a particular place. when we dwell, we pay respect to the world we are in (Holst, 2014), and we emphasize our responsibility to the place we are in by representing it to the natural world. "Only if we are capable of dwelling, only then can we build," (Heidegger, 1971)

When we speak of dwelling, we speak of a place or home, but not every building is a dwelling, and thus not every place is a dwelling either. To think of a certain place is not to

think of its construction technique or what materials are shaping it; but rather, to trace this place back to its roots (Lane, 2007). For example, an office feels like home for an employee who spends eight hours in it, yet it does not shelter him, he might be able to walk blindfolded in that office since he is aware of its behavioral space, and his mind can cognitively map the area around. It would feel strange for him, however, to sleep, nap, or even daydream in his office. This simply is because the space of this office is defined as a working space, not a dwelling.

This understanding of dwelling could be also applied to nowadays housing projects, they might be planned very well, and have an attractive façade and fancy interiors, but do they help their inhabitants to dwell? Are the architects or designers of these interiors well aware of the difference between building a house and defining a space as a dwelling?

Certain structures like stadiums, power stations, railway stations, highways, dams, and market halls are indeed buildings—they are constructed physical entities—they do not fulfill the essence of "dwelling." "Dwelling" transcends the mere act of building physical spaces. It encompasses a profound sense of connection and rootedness to a specific location. Dwelling implies a deep and meaningful interaction with the environment, fostering a sense of belonging and responsibility to the place. It goes beyond the notion of merely possessing a shelter or a constructed structure; instead, it involves an intimate and meaningful relationship with the space.

For instance, stadiums and power stations, designed for specific functions, lack the characteristics that define a genuine dwelling. While serving utilitarian purposes, such as hosting events or generating power, they do not provide the lived experience, rootedness, and connection characteristic of a dwelling place. Nevertheless, Heidegger acknowledges that these non-dwelling buildings exist within the "domain of our dwelling." This recognition suggests that, although not serving as dwellings themselves, these structures play a role within the broader context of human habitation and activity. They form part of the constructed world in which we live, work, and interact, contributing to the overall landscape of our dwelling.

Heidegger's distinction fundamentally underscores the significance of differentiating between the construction of physical structures and the more profound, existential concept

of dwelling. It prompts contemplation not only of the physical presence of structures but also of their meaningful integration into our lived experiences and the contribution they make to our understanding of the world and our sense of place. (Heidegger, 1971).

World-famous architects Peter Zumthor and Juhani Pallasmaa, a Finnish architect, professor, and author widely recognized for his contributions to the fields of architecture, urban planning, and architectural theory. He had a significant impact on architectural discourse, particularly in the areas of phenomenology and the human experience of the built environment. Zumthor and Pallasmaa discussed the being and state of architecture on the 17th of January, 2018 in the Dipoli building, Otaniemi, Finland:

Pallasmaa talked about his very first memory of experiencing space during his childhood when he used to live in a farmhouse as a young 4-year-old kid. The first space he experienced as far as he remembers was a tiny little area under the veranda of his house in which only a small chicken, a cat, and his little body would fit. The second was the attic of his house which he described as his first-ever library and museum. His third was a narrow passage between the cohouse of his grandfather's and the sauna room.

As he demonstrates, Pallasmaa mentions how his understanding of those spaces was not a result of thinking or questioning the function of the space, but of his feelings.

The warmth of the small place under the entrance, the height and the darkness of the attic, and the welcoming of the passage next to the cohouse gave Pallasmaa the feeling of home, this sense of home expanded as he grew up to the outside of the farmhouse and reached a four kilometers nearby village which was surrounded by a forest, and beyond that forest is what he describes as the world.

When we speak of home, we speak of a certain private space that we need to go back to after a long day at work or a long trip. The word "home" provokes feelings, and calls up memories that are related to one, and only one, place. In fact, the Old English word for home is "*ham*" which means a dwelling place or a fixed resident. Yes, home is steady and safe, there is no place like home, it is a fixed point that gives identity to all places, it is in our nature to measure how far or close a certain location is to our home, without home no other place would have a meaning (Norberg-Schulz, 1985).

Inhabiting a place, or being at home, is a feeling we carry with us all the time regardless of our age or how much we know about building or designing, the baby feels at home when he is carried by his mother, the house is home compared to the neighbor we live in, and our bedroom might be more of a home compared to other rooms in the house.

To identify a place as a home is to establish a relationship with its surroundings, it is the first step of being in this world. Home is more than a built structure where we eat and sleep, the sense of homeness begins way before we unlock the front door of our house. Home draws invisible rings around the built structure that we shelter ourselves in. We might feel at home when we land at the airport in our homeland, or maybe when the familiar buildings in our neighborhood start to show up while driving back home, in any case, the feeling of being at home shows up before we actually see it itself, we might not be visually in touch with our house, yet we still are able to indicate how close or far our home is, and once we exit those invisible rings surrounding our home, the feeling of being alienated grows up and we find ourselves on foreign land, very different from the one of our home, we start wondering ‘ what is this place?’ or ‘ where are we?’ this stimulates our instinct of exploring and wandering around, all of these wonders and desires are a result of being away from home, thus, home is the measure of all places, even when it is far away from our eyes.

Now, for human beings to create a place (or a shelter), a connection between them and the space, they are trying to occupy, needs to be established. This connection is the key for inhabitants to be able to dwell in their shelters, in other words, to dwell in a place is to touch its spirit. All living creatures need to feel the spirit of their places, and when we say living creatures, we are not only referring to human beings and animals, however, even single-celled organisms like bacteria for instance need to construct shells for themselves that suit the environment they live in. Over and above that, and to be more precise, advanced animals, like weaver birds, for instance, build their pear-shaped shelters and nests that suit their everyday life activities. Another example could be termites, which prefer to live in high nests that soar like skyscrapers rather than live in nature.

These relatively “artificial” skyscrapers are mostly built using materials like clay or chewed wood glued using their saliva (Tuan, 1977). Thus, the variation in building techniques among living creatures emphasizes the need to build a shelter in which these

creatures can both live and dwell. Furthermore, intelligent creatures like human beings intend to use symbols to personalize their places. These symbols progressively begin to harmonize within the places they exist, creating a whole new identity for this place that only its inhabitants can feel.



4. SENSES AND SPACE

“Nothing in mind that was not first in the senses”. A principle of empiricism inspired by Aristotle. (Grayling, 2019)

The human body is the conductor that connects him to space, we know that dwelling is a psychological need, nevertheless, it happens through one's body. We experience space by feeling it. What is feeling? To feel is to touch or have a connection with something via our five senses. In the Old Norse language, feeling or “*falma*” is to grope or to explore by the sense of touch only, as to blindly feel something. We are bound to the world by our senses, our eyes explore the environment around us, our ears listen to the echoes of nature and our hands reach out to feel the already existing elements surrounding our bodies trying to shape the existing natural materials to fulfill our needs.

The body-world relationship begins with how our senses react to the space we find ourselves in creating a bond between our bodies and the space, this bond, according to Maurice Merleau-Ponty, is known as body-subject and defined as the way in which all our senses blend together giving our body the ability to make unconscious moves, or reactions, in order to conduct our daily life activities (Merleau-Ponty, 1980). It was too early in our lives that we learned how to perform those body-subject activities, but soon after, and out of habit, we believed that such activities were instincts. It is also a habit that taught us to rely on a single sense more than the rest.

From this perspective, we can understand that the field of architecture aims to define a space in a proper way for this body-subject to take place, however, on many occasions, this task is confused with producing eye-pleasing artistic designs that shift architecture from its main goal, that is to define a space.

Much of the architectural writings, whether directly or indirectly, were inspired by the very first treatise on architecture, Vitruvius Pollio's *De Architectura*, the oldest surviving book on architecture that dates back to the 1st century before the common era to around 27 BCE. In which he presents his views on many aspects of architecture, including theater design and the military's acoustical tools. (Long, 2014). His rejection of reducing architecture to a visual art only, was also evident throughout the book, for his text clearly lacks visual illustrations and completely relies on detailed descriptions. In his ten books on architecture,

Vitruvius emphasized the significance of understanding architecture as a discipline that encompasses various fields, including engineering, geometry, and visuals.

Analyzing his work, scholars observed that his ideas were based on the belief that the visual ways of presenting architectural ideas force a single point of view (the perspective of the illustrator/presenter) on the audience. Thus, it leaves no space for the audience's imagination which in architectural terms is the core of any design. The works of Vitruvius were revisited more often than before during the Renaissance era. Only then and throughout the period of reviving classical literature and art, humanism, which is a concept that sets human perspective as the center of everything, was introduced in literature, philosophy, and even architecture, leading to the focus on human perspective as the fundamental tool and concept of any design. This can be observed in visual ornaments and decorative elements, such as the usage of Greek orders, that can be appreciated through one's own eyes only. This exaggeration in the will to please and serve sight has led to a common Western belief in the hierarchy of human senses with sight on top.

By the beginning of the twenty-first century, and with the dawn of the world of virtual reality, architects and designers, using the latest digital technologies, managed to estimate (visually) how most likely a certain building will look like, or what type of building materials will be used in that building long time before the construction phase begins (Roth, 1993).

However, the identity of a created space will not be experienced (physiologically, kinaesthetically, sensorily, or psychologically) until the user or inhabitant of that space is able to walk around it (whether physically or cognitively).

4.1 THE MECHANICAL EYE AND SPACE

The invention of cameras back in 1816 by Joseph Nicéphore Niépce opened new possibilities for communication among people. Cameras basically revolutionized the way we share news and moments. events, statements, and places were not only spoken of or drawn but pictured as well. As a very beneficial invention, cameras became the main tool for recording history. and by the mid-1900s, cameras entered every field including science, art, and even architecture.

When cameras entered the field of architecture, they became a tool for capturing the complexity of a specific architectural design or building, cameras helped architects and designers to share the beauty of their designs with millions of people without them being physically there (Hicks, 2023). Surely, photographed and focused images play an important role in helping one to experience a certain space, the interior space or the exterior façade of a building can be examined visually by looking at printed pictures and images, and with motion videos, people can easily imagine themselves walking and wandering through an interior space. By the end of the 20th century, rendered images using technologies like BIM (Building Information Modeling) made it possible for designers to visualize cognitive spaces on digital screens. However, as soon as a space is photographed, it loses its peripheral value and becomes a two-dimensional focused image printed on a piece of paper (Pallasma, 1996).

Unlike paintings, sculptures, or any other form of art, architecture is not related to a specific time or date, not even to a single point of view, architecture is timeless and in direct relation to being.

Against this background, many architects tried to express their rejection of the purely visual ways of presenting space in architecture, such ways may include the invention of cameras and photographs and the digitally developed techniques. Thinkers such as Adolf Loos, in his famous *Ornament and Crime*, held a critical view of newly developed techniques and argued against unnecessary visual ornamentation in architecture. Loos even goes further and harshly criticizes tattoos on the human body saying that such an act for purely visual aesthetic purposes is a crime! He stated that photography is a superficial addition to architecture that reduces the reality of a place and is incapable of conveying the full aesthetic experience of an object or building such as texture, light, and shadow Loos proudly stated that the inhabitants of his own interiors could not recognize their dwellings by looking at their photographs, for he believed that photography may misrepresent and even distort architectural works, potentially leading to a superficial or misleading understanding of buildings. In other words, he saw photography as a medium that could potentially contribute to the misinterpretation of purely architectural works. His main concern was that through the selective framing and composition of photographs, a building's true qualities, materials, and functionality could be completely concealed. He

argued that photographs could make buildings appear more decorative than they were in reality, potentially leading to a misunderstanding of the architect's true intentions. Furthermore, he highlighted that architecture should be grounded in the qualities of materials, functionality, and purpose, rather than superficial visual ornamentation or aesthetics (Loos, 1913). Photographed images emphasize the domination of sight over other senses, computerized rendered images are driving architecture to be an art for the eyes only. Space became a void that is observed by the absence of objects in a certain focused image. The spatial quality in architecture, however, is not experienced through manipulation of focused images, but in feeling the aura of space by all senses of the body, and mainly by the skin.

“[The skin is] our first medium of communication”, says the British-American anthropologist Ashley Montagu in his *Touching: The Human Significance of the Skin*, “[it is] the mother of the senses] (Ashley Montagu, 1986). The involvement of computing techniques in architecture has been very beneficial since the beginning of the 21st century, especially on the building and construction side, but when high-quality rendered pictures generated using advanced computing devices become our main, as well as the first, way of experiencing space, designers will soon think of architecture as an art that is only meant to please our eyes.

4.2 SIGHT-LESS ARCHITECTURE (SPACE AND PLACE FOR VISIONLESS PEOPLE)

Thinking now of the ocular-centric architecture surrounding the human body makes it almost impossible to imagine how visionless (or blind) individuals interact with their places. This also raises the question of how sightless people can perform their body-subject activities in a world full of eyes.

In her *Bound to the Environment: Towards a Phenomenology of Sightlessness* Miriam Helen Hill explores how blind-born persons feel places around them and how they - perceive- the world. Studying how sightless people wander in a space created according to everyone's eyes assists sighted people in exploring the space around them by blending their sense of seeing with the rest of their senses. Architecturally, this study might also enlighten architects of the twenty-first century in understanding how each architectural

element has a massive impact on our whole body even though most of them (elements) are placed to please the eyes only (Seamon & Mugerauer, 1985).

“The perceptual something is always in the middle of something else” (Merleau-Ponty, 1980). When we speak of a visual space we are speaking of a bounded space (like a room with four walls) containing outlined objects that can only be perceived by distinguishing them from their background image. Visual space is like a box with things inside, our eyes can only see the surface of those boxed-in things but can never dig, nor scratch, through them, thus, can never be sure about the reality of such things. The eyes answer what a thing looks like, and the rest of the senses answer whether a thing exists or not.

Visionless people do not live in a visual space, they live in a space with no boundaries, a dynamic space without a background. The sightless live in a space where the boundaries and the objects of the space are whole and unseparated from the space itself (Hill, 1985).

Free of what they see, sightless individuals would blend all of their senses to draw themselves closer to the world, and unlike sighted people, they can interact with things in their surroundings regardless of their appearances or whether the space they are in is dark or lightened.

On many occasions, sightless people seem to have a more accurate sense of direction, or orientation, than sighted ones. A foggy day, for instance, would make no difference for a sightless person to take a walk in.

At this point, it might be worth questioning; To what extent can the deceptive visual characteristics of a thing trigger a false belief about that particular thing in us? To put this question in a more explanatory form we need first to think of one, out of many, visual characteristics that we refer to while we define a certain thing, say, color. Colors are a property of an object that cannot exist without the object itself. In other words, it is impossible for us to imagine the right form of red without referring to a certain red object.

Sighted people, who perceived the way an object and its visual property (like color) are one and unseparated, will soon believe that all objects which share one visual property among each other would in some way share another different, non-visual, property. Take fire as an example, to describe what color fire is the most common answer would be red,

thus, red is categorized as a warm color, and the more we see how red the fire is the more we would believe how “warmth” and “red” are indistinguishable from each other. Looking now at any other red object will give us a sense of warmth regardless of its temperature, even though the temperature is not something we recognize via our sight but using our tactile sense.

To take this to another level, even the visual properties of an object that oppose another already known object would delude us into believing that their properties oppose each other as well. Just as fire and water contradict in temperature or in matter, both of their representative colors, blue and red, will arise in us two contradicting feelings, warmth or coolness, again, regardless of what the perceived objects, that red and blue represent, are.

Sightless people are free of such illusions, their inability to know what color a thing is, frees them from the deception of physical appearances that sighted people face almost in everything. There are many cases, in spite of them being rare, in which sighted people are forced to be aware of the role played by other senses, other than sight, in reacting to the environment. For example, during a sudden electrical cut-off or walking on a misty day. In such situations, we can easily understand how much we rely on our sight, and how eyes are the first, as well as the main, organs that we use to experience the space around us.

During such rare situations, we try to find some other (blind) ways to perform our tasks, and despite this being uncanny and odd, those (blind ways) might be more honest than visual ones. To put it in another way, if one’s eyes are closed, one’s ears and other sensory organs will be aware of the smallest detail around.

When our eyes are closed, we dream, we daydream and we think. We close our eyes while we are trying to recall a memory, or when we are hugging our dear ones. We unconsciously close our eyes while listening to a lovely soundtrack or getting a taste of our favorite meal.

The act of closing our eyes in those cases reflects how the world around us is full of visual, mostly artificial, distractions that we tend to avoid when we try to focus on a specific task.

Having said that sight-less individuals are unable to react to some design elements, like colors or light and shadow, still, their sense of space is not any weaker than sighted people,

if not stronger since they are free of any visual distractions, they have found their own ways to be-in the world and to feel the acts of nature on them and find sight-less ways to react to it through their ears and skin.

The architecture of the twenty-first century is full of visual details and many aesthetical elements that are almost functionless. The newest digital, and virtual, ways of representing architecture are meaningless to sightless people, and to sighted ones are misleading. And as, so-called, blinds proved to us, the visual ways of experiencing space blind us from touching the spirit of that space.

For many sighted people, including architects, the difference in building materials might mostly, if not totally, seem to be for aesthetical reasons only. For sightless people, however, the different textures of different building materials, that can be felt using the tactile sense, would give important clues to identify a certain place.

This could be applied to any architecturally designed element. The application of a decorative and well-designed partition wooden wall next to a structural concrete one in a public space, for instance, might be scanned quickly using our eyes or might be a nice spot to photograph. For sightless people, however, such details play a crucial role in memorizing the space and help them circulate through it later.

It is worth mentioning that sightless people have no superpowers or an extra sense that sighted people do not have, sightless ones are just less distracted by the functionless ornaments surrounding everyone. Both sighted and sightless people's bodies are affected by the smallest detail around them. All the designed elements have an impact on us, and all of our senses react to them. For all humans, reactions to what they receive via eyes and other senses should be balanced. For architects, the whole body and sensory organs should be considered while designing.

4.3 AURAL ARCHITECTURE

The term aural architecture became recognized by the late 20th century, it is a way of designing space, mainly based on sound, it involves the intentional arrangement of sound elements to create a specific acoustic atmosphere or experience. Aural architecture takes into consideration factors such as sound reflection, absorption, diffusion, and transmission

to shape the way sound behaves in a given space. Despite all the common ocular-centric ways of experiencing space, such as photographs and three-dimensional rendered images, still, we cannot deny the crucial role played by the rest of human senses in feeling a space.

Probably, this is one of the reasons why architecture is known as “the mother of all arts” as it is not only limited to any of our five senses. Architecture goes beyond the eyes and leaves a mark on our souls and memories, in a way that we would be able to blindly feel defined spaces and see them with our ears or skins.

Interacting with a space using our ears for instance might seem less common than doing it with our eyes, this is because our eyes can understand spatial elements by simply comparing those elements with previously witnessed ones.

Now it is true that spatial elements used by architects to define spaces are never the source of any sound, yet, they have audible characteristics such as sound reflection that interact directly with our ears. To simplify this idea, we think of a solid wall as an example of a spatial and architectural element, when we try to walk toward a wall blindly, our ears will react to the echo of our footsteps reflecting on the wall which will warn us to stop or change our direction. This example could be scaled to all the noise surrounding us as well as all the spatial elements with audible features. A single wall is acoustically much less complex than a real environment like an urban district or a crowded street, thus, the hundreds of sound sources around us and the many sound-reflecting objects create what is known as aural space.

Acoustics in space could be as important as visual elements, to give a better understanding of the role played by sounds, we can think of a metro station during rush hours, it would feel strange to be in a completely calm metro station, engines sounds are main factors in adding an identity to the space of metro stations.

Another example could be private bathrooms, it seems odd to practice any daily life activity in a bathroom, still, it is a very common place to sing in, as the small space of a bathroom and its interior materials, such as tile, cause sounds to bounce around the space and not be absorbed. In concrete halls, space becomes another instrument, more than a social gathering area, it is a tool used by composers and musicians to give the audience an experience that does not solely rely on a single sense (Blessner & Salter, 2006).

Peter Zumthor, a Swiss architect and thinker known for his poetic and timeless architecture gave sounds a crucial role in creating an atmosphere of space, as a matter of fact, he believes that each space has its own sound, and if we do not listen carefully, we will not be able to be in touch with it. In his book *Atmospheres: Architectural Environments, Surrounding Objects*, Zumthor shares his personal experience about how the noises that his mother made in the kitchen with pots and pans made him feel happy and at home.

The sounds of space are not only caused by foreign elements but sounds are also caused by the space itself, in other words, thinking of a soundproofed room, any bit of noise, such as footsteps for instance, would give a unique aural identity to that room caused by the reflection of sound on the combination of materials used in that same room, these reflections are so unique that it is almost impossible to find an identical space with the same surroundings and same audible material (Zumthor, 2006).

Studying concepts like aural architecture helps architects to understand the role played by human senses and not only sight in experiencing space. It is crucial now to understand that feeling space via our ears and eyes should not be ordered in any way. Vision, hearing, touch, and smell harmonize together during the process of experiencing space, meaning that, there should be no predetermined sequence or ranking when it comes to how we use our senses to understand the space around us, we should not prioritize one sense over another. Instead of treating these senses in isolation, we should allow them to work together in a coordinated way.

This means that when we perceive our environment, we should not rely solely on one sense while neglecting the others. Each sense should complement and enhance the others, creating a more holistic and integrated understanding of the space we are occupying. Senses are continuously active and interconnected as we navigate and interact with the world around us.

We become more aware of the aural characteristics of natural and artificial elements around us when our eyes are closed, and the sounds in our environment become more prominent as if our ears are alternative to the eyes in experiencing space. when we block our visual input, we become more conscious of sound features, such as tone, pitch, volume, and timbre. This way of (ranking), however, is not an instinct nor natural, it is more like a

habit, a result of cultural interests in pleasing, or attracting the eyes. It is a learned behavior influenced by cultural interests in visual aesthetics.

However, if we put all those ocular-centric thoughts aside, we will find out how transparent the aural space is, compared to visual space. Unlike sight, listening brings us to the inside of the aural space, this space is like a sphere and listeners are in the center of it. They are a whole with the space, an inseparable part.

Sight, on the other hand, brings the sighted individual to a certain point from which he/she can direct his vision linearly through the space until this contentious visual line hits a solid object and then stops on its surface.

In other words, sight is linear and works in a direction, hearing is spherical and requires no direction (see Figures 4.1 and 4.2).

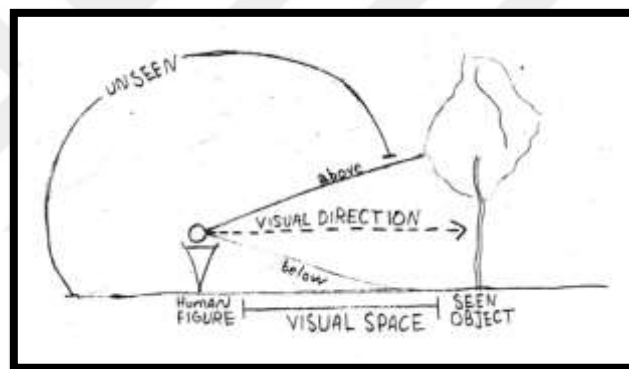


Figure 4.1: Illustration of Visual Space.

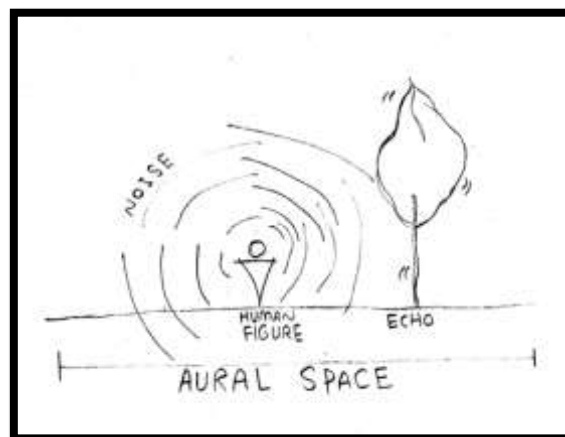


Figure 4.2: Illustration of Aural Space.

Sounds in space could be as important as light is to our eyes. Aural elements, nonetheless, might be less deceptive than visual ones, probably due to the widespread of visual elements around us, leaving less space for our ears to lie.

Architecturally, buildings and architectural elements react to acoustics, as they echo sounds and noise around, on the contrary, when a building is being looked at, or photographed, it shows no sign of reaction whatsoever. Simply, space returns, or echoes, sound back to us, but it does not look back at us.

The architectural elements and building materials that are used in designing skyscrapers of the twenty-first century, for example, do not seem to help in balancing between seeing and hearing, they prioritize the former and emphasize its dominance over the latter.

The application of large glass panels on the facades kills one's imagination by answering 'What is behind this wall?' and with sound isolation materials, and even air conditioning, this will lead to uncanny and contradictory feelings in which one can see what is on the other side without being able to hear or sense what is really like to be on the other side.

This will soon create a separation between our sensory organs and force us to rely on the sense that everything is designed for, the sense that can see through glass and witness the ornaments of the interiors and exteriors, the sense of sight.

With all the ocular-centric arts and visual distractions surrounding a human, people, during their honest and spiritual acts, prefer to use acoustical tools to express their feelings.

In many religions, sound seems to be the only direct, and honest, factor on which people rely while trying to communicate with God. listening to religious chants, prayers, or bells, is believed to facilitate a more immediate and genuine spiritual connection. Minarets in Islam and church bells in Christianity are used to unite all people through sound only.

The sacred noise that comes out of the church bells, or from the muezzin, who is often sightless, during the act of calling for prayers in the Islamic culture, is the only tool in which humans tend to use to get in contact with God. These sounds are seen as a means of communication with the divine, or a way to invoke a connection with God.

Visual representations of the divine, such as statues or images, may be perceived as less pure or immediate, they are less honest. And apparently, humans can never be able to reach God by sight.

In addition to the previously mentioned point, seeing and hearing differ in terms of the distance between the sensory organs and the sensed objects. This means that when we try to reach something via our eyes there should be a distance, preventing us from being in direct touch with the sensed object, otherwise, if an object is viewed too closely or too focused, like through the lens of a camera, it will lose its peripheral value, creating a very detailed image of the perceived object, still, we will not be able to form a holistic idea about it.

To sense an object using our ears, however, is to get its sound or noise into our head (even when a thing is silent, we can still hear it by contrasting its silence with any other noise in the background). To put it in a simpler form, we need to be at some distance from an object to see it, but we can hear sounds without physical proximity. Hearing can provide a more holistic understanding of objects in some cases, as it is not as constrained by distance or narrow focus as vision can be.

4.4 ARCHITECTURE WITHOUT WALLS

In 2007, the Italian architect, engineer, and inventor Carlo Ratti unveiled his one-of-a-kind pavilion with no walls or windows, just water. Located in Zaragoza, Spain, the Digital Water Pavilion features technological elements such as interactive screens, projections, and water displays that respond to human presence and movement, creating a dynamic and engaging environment. The combination of water, light, and digital elements aims to explore the relationship between humans and their surroundings, offering a unique sensory experience. To enter the pavilion, access through a main door or entrance is not needed, simply, when a visitor approaches, the water walls will open up, like a curtain, and give access to the interior space. The interior walls of the pavilion are not fixed as the water walls can be relocated according to the visitors' circulation. Thus, there is no fixed plan for the interior space that can take multiple shapes giving the pavilion more than one way to walk through it.

architects of the late 1990s focused on creating a unique art piece rather than defining a space according to human needs.



5. CONCLUSIONS

The term "space" holds various interpretations and definitions. Throughout history, scholars and thinkers from diverse fields have contemplated and explored the concept of space as an encompassing realm that encompasses all things. Linguistically, according to the Etymology Dictionary, the word "space" has been commonly used since the 14th century to denote a vast expanse of land or an empty region.

It was only in the 20th century, with the significant advancements in outer space exploration, that "space" became widely associated with what extends beyond Earth's atmosphere. Similar to many English words, "space" originated from the Latin word "spatium," which literally means "extent" or "room." Interestingly, the German word for space, "Raum," bears a phonetic resemblance to the English word "room."

Aristotle, for instance, perceived space as finite rather than infinite, asserting that its significance arises when celestial bodies are in motion (Mpantes, 2014). Mathematically, according to Cartesian reasoning, space is intricately linked to matter, and they are interdependent. As noted by Slowik (1997), Descartes defines space using three real numbers as its coordinates. In essence, space is a measurable geometric entity, akin to concepts like area or volume.

Space in architectural design mostly refers to the three-dimensional environment created by the arrangement of architectural elements, such as walls, floors, ceilings, and structural components. It is a fundamental aspect of architectural design and has a profound impact on the functionality, aesthetics, and user experience of a building.

Furthermore, it is a complex and multi-faceted concept that requires a balance between functional requirements, aesthetics, and the overall user experience. Architects carefully consider these factors to create spaces that are both functional and visually appealing.

Leland M. Roth categorizes space into four distinct types. The first is physical space, which can be visualized as the three-dimensional volume enclosed by walls, floor, and ceiling, such as an empty room. The second type is perceptual space, which is space that we can perceive and experience through our five senses, including touch and sensory perception. This type of space can extend beyond the physical boundaries, and features like

windows play a significant role in this perception. The third type is conceptual space, which can be likened to a mental map or memory stored in our minds, enabling us to navigate and move within a place. Finally, the fourth type is behavioral space, where our actions, movements, and interactions with people and objects take place.

Understanding these four types of space provides valuable insight into the essential role that architects (and even city planners) play in shaping and influencing our daily lives. It underscores the complexity involved in creating spaces, whether they are large residential buildings or small structures like bicycle sheds.

This thesis puts the relationship between humans and their spaces on the table, touching upon the human need for space, both physically and mentally, and explores how architecture and building design as a field have played a significant role in shaping human identity and the identity of the spaces they occupy. This interconnectedness between humans and their places, as well as the expression of thoughts and feelings through various means, has been pivotal in the development of distinct cultural identities.

Contemplating the experience of space involves considering an individual's unique encounter, which differs from one person to another. This experience becomes tangible when we comprehend the relationship between one's body and its surroundings. Humans engage with the world through their bodies. "Body," or "Bodig" in old English, etymologically refers to a physical structure or a tangible framework. The term "body" typically evokes the image of an inanimate object that occupies space, yet it may not necessarily be inhabitable.

Chapter II suggests that the "world" is the space where a person utilizes his/her body not to only occupy but also to inhabit a small portion. The word "world" traces its roots back to Proto-Germanic, forming from the combination of "wer," meaning man, and "ald," denoting age. In essence, the world is where humanity ages, exists, and meets its physical and psychological needs for survival.

As Maslow's hierarchy of needs suggests, under the category of safety and physiological needs shelter or a place is one of humans' ultimate necessities. This goes beyond occupying places made for aesthetical purposes.

It is worth noting that the insights presented in this research are primarily derived from an extensive body of architectural scholarship that centers on comprehending the concept of space, the psychological impact of defined places on humans, and, most importantly, the significance of the dwelling process. However, it's crucial not to confuse the acts of building or designing with the act of inhabiting a space.

The realm of architecture (distinguished from architectural design) is where we seek to comprehend how individuals inhabit and live in spaces. Dwelling in a space is not merely a choice but a fundamental need and priority, whereas building and designing only come into play once the readiness to dwell is established (Schulz, 1979). It is our duty to acknowledge that historically, the concept of dwelling predates that of building.

The chapters of this thesis distinguish between the definitions of space, place, and dwelling, enabling the reader to differentiate between concepts like inside and outside, dark and light, public and private, and even without architectural structures. It further argues against contemporary architects' tendency to treat space as an empty canvas to be filled, resulting in aesthetically pleasing but empty places.

When we refer to dwelling, we are talking about a specific place or home, but it's important to note that not every building serves as a dwelling, and thus, not every place qualifies as a dwelling either. Contemplating a particular place doesn't entail thinking about its construction methods or the materials used to shape it; rather, it involves delving into the essence and origins of that place (Lane, 2007). To be more precise, dwelling is not an invention like writing or drawing; but rather, it is an innate need that can be explored but not invented.

The need to build a place and dwell in it is not only a humanistic desire. The need to feel the spirit of a space and become a whole with it is similar to the rest of our natural needs that we, humans, have in common with animals as well as the rest of living creatures.

A place provides security and warmth, it is where everything starts, and nothing can happen without "taking place". a place should fulfill all our needs, and these needs are not only physical, but also psychological because we do not only eat, but also sleep, and work in our places, we think, dream, and even daydream in them, it is said that the house shelters

daydreaming and it protects the dreamer, it allows one to dream in peace (Bachelard, 1957: 06).

As previously highlighted, a true place is not merely a location; it is a phenomenon, a tangible part of the environment where humans dwell. The essence of a place lies in its ability to harmonize with the sensations, memories, and behaviors of its inhabitants, as it encompasses the way humans exist on Earth, as argued by Heidegger in his *Poetry, Language, Thought* (1971).

Creating a place, or a shelter, involves establishing a vital connection between humans and the space they intend to occupy. This connection is the key to enabling inhabitants to truly dwell in their shelters, as dwelling in a place means connecting with its unique essence. This connection between a human and his/her shelter is translated to (being home).

Now, when we refer to "home," it signifies a specific private space where we seek solace after work or travel. The word "home" evokes emotions and recalls memories tied to a unique place. In Old English, "home" is referred to as "ham," signifying a dwelling or a fixed residence. Home represents stability and security, and it serves as a point of reference that provides identity to all other places. In short, we naturally measure the proximity or distance of any location in relation to our home, highlighting the profound significance of home as a reference point in our lives (Norberg-Schulz, 1985).

The concept of "home" extends beyond the physical structure where we eat and sleep; it encompasses the relationship we establish with our surroundings. This feeling of being at home begins long before we even reach our front door. Home creates invisible boundaries around the physical structure where we reside.

We may experience the sense of being home when we arrive at our homeland's airport or as we recognize familiar buildings in our neighborhood while driving back home. Even before we visually see our house, we can sense the feeling of being at home, and we can gauge the proximity of our home.

Once we step beyond these invisible boundaries, a sense of alienation grows, and we find ourselves in unfamiliar territory, prompting questions like "What is this place?" or "Where

are we?" These inquiries stimulate our natural curiosity and wanderlust, all of which result from being away from home. Thus, home serves as the reference point for all other places, even when it's out of sight.

This sense of being home cannot be explained by physical or material means, it is solely a psychological matter, and a feeling that can only be expressed inside one's mind. However, this link between home and its inhabitants is materialized in the actions and reactions of one's body, in other words, dwelling is a psychological need but only experienced through one's body. And to experience something is to establish a connection with it through the five senses. In Old Norse, "feeling" or "falma" specifically conveys the idea of exploring or touching something, often through the sense of touch alone. In this case, the human body serves as the link between an individual and the surrounding space.

Our senses tie us to the world. Our eyes observe the environment, our ears listen to the sounds of nature, and our hands interact with the materials surrounding us, shaping them to fulfill our needs. The relationship between the body and the world begins with how our senses respond to the space we occupy, creating a body-subject bond, as defined by Merleau-Ponty (1945). This bond enables our body to unconsciously perform actions and reactions necessary for our daily activities. In terms of architecture, the body-subject link, or body-place relationship, varies from one person to another, as not everyone reacts to their surroundings in the same way.

As a result, this research merely employed phenomenology in order to explore this body-place link through various individual experiences. Phenomenology is a philosophical movement that emerged in the 20th century, presenting a fresh approach for intellectuals to comprehend the world by considering diverse individual experiences.

The research concludes that the wide scope of various personal experiences of space is primarily included in an experience of human senses reacting to their surroundings. Hence, an early step of defining space should be taken into account by architects. This step is mainly a holistic understanding of the relationship between the human body and space through our 5 or even 6 senses. In addition, it suggests avoiding the arbitrary ranking of any sense at the expense of the other, which is often mistakenly believed as an instinct or a natural act due to habitual behavior.

The invention of writing around 3400 B.C.E. marked a significant shift in human communication. It transformed speech from being primarily vocal to being written, leading to a more visual form of aural space. People not only heard but also began to receive information and data by reading letters and texts, giving sight a prominent role among the senses.

This transition from oral to visual communication has led to a greater emphasis on sight over the other senses, and it continues to do so. The shift from spoken to written communication has created new ways for people to exchange ideas and emotions, with a heavy reliance on what is seen. Whether it's through television, movies, or photographs, the world is now predominantly understood through the sense of sight, and our interactions with the environment are often framed by how we perceive it or how we are perceived by it.

Greek philosophers, particularly Plato, emphasized the significance of sight, with Plato suggesting that humanity's greatest gift is vision. His metaphysical thinking centered on the idea that things gained their identity through observation. This view, also endorsed by Aristotle, contributed to the concept of ocularcentrism, which ranks vision as the primary sense in Western perception. They also added to the importance of sight, suggesting that things only truly had identity when they were observed.

Just like the case of most of the beliefs of the Greek philosophers and Greek culture, the concept of emphasizing vision was brought under the spotlight once more during the Renaissance era in the 14th century.

The Renaissance era witnessed a heightened focus on visual art, with artists like Michelangelo, Raphael prioritizing sight as the primary means of understanding and interpreting the world. Humanism further reinforced this focus by placing humans at the center of the universe. Renaissance architecture also reflected this trend by returning to Classical forms, emphasizing symmetry, balance, and proportional systems to create illusions of depth and height.

While ocularcentrism wasn't explicitly articulated during the Renaissance, the period's art and architecture undeniably contributed to the development of this concept. Buildings were designed with meticulous attention to detail and proportion to create awe-inspiring and

aesthetically pleasing structures, exemplifying the dominance of sight in architectural design during this period.

By the end of the Renaissance era and with the emergence of modernism, the domination of sight did not seem to decrease, but rather it grew with the introduction of new techniques and inventions such as cameras, similar to the ocular-centric techniques used during the Renaissance era presenting architectural ideas, photographs have strengthened the role played by sight in experiencing space.

Cameras pivotally controlled the field of architecture, enabling the capture of intricate architectural designs and buildings. This technology has allowed architects and designers to share the beauty of their creations with a global audience, offering a visual exploration of both interior spaces and building facades. While photography and motion videos provide a means to experience architectural spaces visually, there is a limitation: once a space is photographed, it becomes a two-dimensional image on paper, losing its peripheral qualities.

Nevertheless, architecture, unlike traditional art forms, is not bound by a specific time, date, or single viewpoint; it is timeless and deeply connected to existence. Adolf Loos argued that photography is a superficial addition to architecture, incapable of conveying the full aesthetic experience of a building, including its texture, light, and shadow. Images, whether photographs or computer-generated renderings, tend to prioritize the sense of sight over other senses, reducing architecture to an art for the eyes only. In contrast, the true spatial quality of architecture is best experienced through all the senses, primarily the skin, which serves as our first medium of communication.

By the end of the 20th century and the beginning of the 21st, digital architecture, as an extension of postmodernism, highlighted the computing technologies in architecture and design, technologies that can totally be interacted with via vision since all its data are trapped behind the screen. Although such computing technologies have greatly benefited architecture, there is a concern that when high-quality computer-generated images become the primary way of experiencing space, architects may begin to regard architectural design as an art primarily focused on visual aesthetics, neglecting the richness of multi-sensory experiences in architectural spaces and limiting them to become only visual spaces.

The concept that "the perceptual something is always in the middle of something else" emphasizes the interconnected nature of perception. Visual space is characterized by bounded spaces with defined objects perceived by distinguishing them from their background. It's akin to a box containing objects where our eyes can only see the surface, making it impossible to fully understand the reality of those objects. While our eyes answer the question of "what a thing looks like," the other senses help determine whether a thing truly exists or not.

This might make one wonder how a sightless individual can perform his/her daily life activities in a space defined on visual grounds only, thus studying how blind individuals navigate through spaces designed primarily for the sighted can offer valuable insights to sighted people, helping them explore their surroundings by integrating their sense of sight with their other senses. This study also has architectural implications, as it can shed light on how architectural elements, often designed for visual aesthetics, significantly affect the entire human body.

Despite being unable to react to design elements like color or light and shadow, visually impaired individuals possess a strong sense of space, perhaps even stronger than sighted individuals. They've developed alternative ways to engage with the world, relying on their ears and skin to perceive and interact with their surroundings, free from visual distractions.

Sighted individuals often associate an object's visual properties, like color, with non-visual properties. Chapter 4 exemplifies that using the case of the relationship between colors (a merely visual property of things) and the objects they represent.

So when sighted individuals see the color red associated with fire, they link red to warmth. The more they observe the redness of fire, the more they perceive red and warmth as closely connected. Consequently, looking at any other red object evokes a sense of warmth, even if the object's temperature is not assessed through sight but through touch.

Moreover, even visual properties that contrast with those of a known object can lead to the belief that their non-visual properties also contrast. For instance, fire and water differ in temperature and substance. The colors representing these elements, red and blue, elicit contrasting sensations, such as warmth and coolness, regardless of the actual properties of the objects these colors represent.

In the 21st-century architectural landscape, there is a proliferation of visually oriented details and aesthetic elements that may lack functionality. New digital and virtual methods of representing architecture may be meaningless to the visually impaired and potentially misleading to the sighted. As exemplified by the blind community, a heavy reliance on visual experiences can hinder our ability to truly connect with the essence of a space.

Even for sighted individuals closing eyes is a common human behavior, whether for dreaming, recalling memories, hugging loved ones, enjoying music, or savoring a meal. It's a way to block out the visually distracting world around us and focus on a specific task or experience.

Based on that, space can be more transparently experienced via our other senses, such as hearing (this does not mean one should neglect the importance of our vision, but it only points out the multisensory harmonious way of being in space).

Aural architecture, recognized in the late 20th century, involves designing spaces primarily based on sound. It focuses on intentionally arranging sound elements to create specific acoustic atmospheres or experiences. This approach considers various factors like sound reflection, absorption, diffusion, and transmission to influence how sound behaves in a given space. Despite the prevalent emphasis on visual experiences in understanding spaces, we cannot overlook the significant role played by the other human senses in perceiving a space. Architecture, often referred to as "the mother of all arts," transcends reliance on just one of our five senses. It has the power to leave a lasting impact on our souls and memories, allowing us to feel and even "see" defined spaces using our hearing and touch.

The sounds within a space are not solely a result of external factors but are also influenced by the characteristics of the space itself. To illustrate, in a soundproofed room, even a slight noise like footsteps can create a distinct auditory character for that room.

This uniqueness arises from the way sound bounces off the specific combination of materials used in the room, making it nearly impossible to find an identical space with the same surroundings and identical acoustic properties. The exploration of concepts like aural architecture is valuable for architects as it enables them to comprehend the significance of human senses, not just sight, in how we experience a space.

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