

# INTERIOR ARCHITECTURAL ISSUES

**DESIGN  
THEORY  
PHILOSOPHY**

Editor  
**Kağan Günçe**



LIVRE DE LYON  
2023

Architectural  
Sciences

**INTERIOR**  
**ARCHITECTURAL ISSUES**  
**DESIGN, THEORY & PHILOSOPHY**

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## **Interior Architectural Issues - Design, Theory & Philosophy**

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# PREFACE

## **‘INTERIOR ARCHITECTURAL ISSUES – Design, Theory & Philosophy’**

Interior architecture is a multidimensional field that focuses on the interior design of the built environment, as well as the space that has the potential to be defined. This area aims to offer ‘design’ by producing the most appropriate solutions according to functional, structural and aesthetic criteria in a space, as well as the ‘anthropometric’, ‘sensory’ and ‘perceptual-mental’ aspects of the user. Understanding the space, which is one of the most basic requirements for existence, has always been a curiosity and an endless subject of research, questioning and interpretation for designers. The space, which can be described as a piece of space whose boundaries are determined by the senses, is at the center of the discipline of interior architecture. In this context, the subject of space and the act of designing the space is the artistic fiction of the contact that human and artificial nature will establish with each other.

Interior architecture issues began to be institutionalized in the United States in the early 1900s in the field of industry and education. This formation, which contains fine arts in its essence, has become a multidimensional profession accepted in a significant part of the world in a short time. Although interior architecture as a profession was initially structured as a special field that developed with the focus of architecture, it currently maintains its unique professional structuring in a dynamic phenomenon. Interior Architecture profession has become a ‘basic science field’ that continues its development with expansions to ‘design’, ‘theory’, ‘philosophy’, ‘environmental psychology’, ‘conservation - renewal’, ‘history’, ‘material’, ‘structure’, ‘physical environment control’ and ‘education’.

Naturally, there is a shortage of written documentation and resources in the field of Interior Architecture, which can be considered new. In order to support the development of the field of interior architecture, it is inevitable to deal with and examine all its dimensions and to put forward concrete documentation by making future projections. With this awareness and responsibility, this issue was brought to the agenda by me in the Journal of Interior Design and Academy (INda), of which I am a stakeholder, and was supported by the editorial board of the journal. The name ‘INTERIOR ARCHITECTURAL ISSUES’, which I suggested for this book that will contribute to the field of Interior Architecture, was found very meaningful and inclusive by the editorial board. This journey continued and was completed

with an enjoyable, exciting, long, productive, meaningful, productive and intense effort.

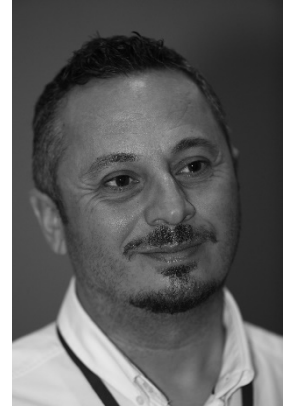
When the call was made with the aim of collecting the studies to be done on the above-mentioned subjects in a book, very positive and good reactions were received. These positive responses have once again clearly demonstrated that such a study has been needed for a very long time. In order to achieve the ‘first’ in this field in the best possible way, we have been very meticulous, selective and sensitive. In the call for the book titled ‘INTERIOR ARCHITECTURAL ISSUES’, 72 book chapter suggestions were received from very valuable academicians. As a result of the evaluations, 38 studies were selected and this journey started. Evaluation and classification of 38 studies, each more valuable than the other, were done meticulously. After this meticulous process, 18 valuable book chapters in the book named ‘INTERIOR ARCHITECTURAL ISSUES – Design, Theory & Philosophy’; 20 valuable book chapter studies were also found suitable to be included in the book named ‘INTERIOR ARCHITECTURAL ISSUES - Design, History & Education’. Both of these valuable books will be published in the same time period.

‘INTERIOR ARCHITECTURAL ISSUES – Design, Theory & Philosophy’, where the works of expert researchers in the relevant field, ‘Department of Interior Architecture’, ‘Department of Interior Architecture and Environmental Design’ and academicians who are academics in related departments are published. With this book named ‘INTERIOR ARCHITECTURAL ISSUES– Design, Theory & Philosophy’, it will create a new platform with new initiatives by shedding light on the field.

I would like to express my endless thanks not only to Livre de Lyon Publishing House, which opened its doors to us for its book project; to the editor and editorial board of the Journal of Interior Design and Academy (INda), who have supported this project from the very beginning; but to the doyen academics who have served in the field of Interior Architecture for many years, who have taken part in this book project as the author of the book chapter with their valuable work, and to the young academicians who have started to work enthusiastically on this path and give hope.

**Prof. Dr. Kağan GÜNÇE**  
**Editor**

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**Prof. Dr. Kağan Günce**  
**Editor**



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# CHAPTER I

## INTERDISCIPLINARY PHILOSOPHIES OF INTERIOR DESIGN AND FURNITURE: A LOOK AT EDGAR ALLAN POE’S WRITINGS

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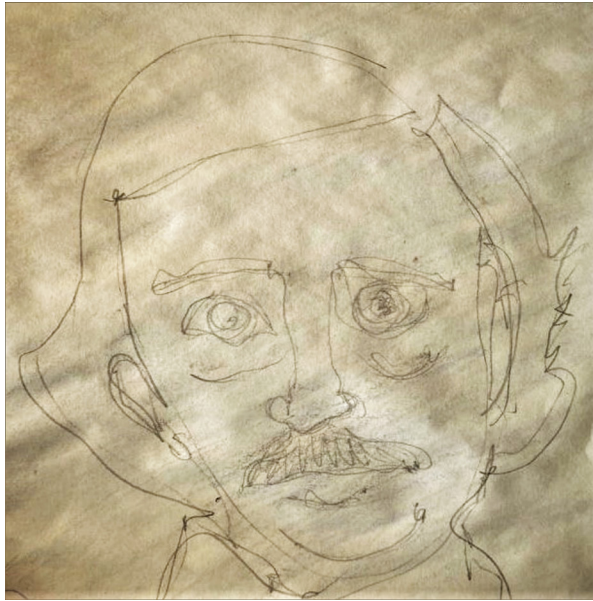
### 1. INTRODUCTION

Countless authors have described furniture and interiors with such intensity that may have constructed an actual visualization of the space in the reader’s mind, in terms of how it looks, feels, and even smells. Marcel Proust (1871-1922) has described in lengthy elaboration, his cork lined room, completing his novel, “*In Search of Lost Time*” (1913–1927), which coincided with the last three years of his life. The walls of his bedroom were lined with cork in order to prevent dust and noise from coming inside. He also kept his windows and heavy blue curtains closed, isolating himself completely from the outside world. Musée Carnavalet in Paris recreated this room with his green shaded lamp –the only source of light. From this room, he imagined an enriched world and wrote about interiors he had never visited, yet constructed in his mind’s eye in great embellishment. Stephen King (1947-...) has captured the true essence of Maine, United States, where he was born and raised. He described his settings deriving a great deal from Maine, with its small and dark shops, empty streets, woods, and adjacent junkyards, as can be read in well-known stories, “Salem’s Lot”, “It”, and “Needful Things”. As most accomplished writers, these authors appear to have a heightened sense of the environment, orchestrating the components of interior space akin to an interior designer while creating a scenario for the people who will live in these spaces –whether real or fictional.

Among these internationally recognized authors who wrote about spatial characteristics and stylistic tendencies in interior design, is an unexpected name

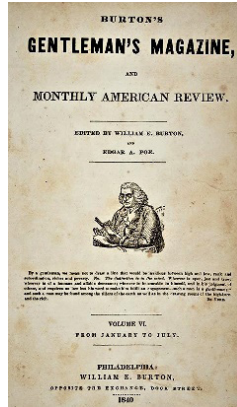


-American poet and author, Edgar Allan Poe (January 19, 1809 – October 7, 1849), who is well known for his dark poetry and mystery stories. One might readily recognize the poetry of “The Haunted Palace” (1839), “The Raven” (1845), or his short stories such as, “The Black Cat” (1843), “The Murders in the Rue Morgue” (1841), from popular culture. Poe has also written several essays on a variety of topics such as, “The Poetic Principle” (1848) or “The Philosophy of Composition” (1846), where his authorship was in the fore (Figure 1).



**Figure 1.** Inspired by daguerreotype of Poe, “Ultima Thule” (far discovery) in quest for the new photographic technique taken in 1848 by Edwin H. Manchester, drawn by author

At first glance, it may appear that the author, just like the aforementioned Stephen King writing about his own background and writing style in “On Writing: A Memoir of the Craft” (2000), wrote either about his areas of interest or about the creative task of writing itself. However, in 1840, Poe wrote an essay in which he collected personal views on furniture and interior design titled, “The Philosophy of Furniture” for Burton’s Gentleman’s Magazine, which was widely circulated in the day (Figure 2) (Poe, 1840). The article was published once more in 1845 in the Broadway Journal, as “House of Furniture”.



**Figure 2.** Burton’s Gentleman’s Magazine, edited by William E. Burton and Edgar Allan Poe (1840)

Although the essay was a two-page compact piece of writing, it was also a literary and humorous piece in which stark ideas are shared with a wider audience. Although the essay has been considered in terms of its literary context and its recognition among Poe’s other works, it has not been recognized as a statement in the interior design field. This is why it deserves a reexamination as a way into the interdisciplinarity of the interior design field, regarding what can be stated as a stylistic approach to interiors by an accomplished author, and the effect that it might have had in the times that have followed and have far that effect might have reached.

In several works of the Poe, such as the short story, “Landor’s Cottage,” (1849) the author describes his ideal New York cottage in much detail, beginning with the carpet. Interestingly enough, this will be repeated in *The Philosophy of Furniture*. He is especially interested in the large planar surfaces that defined interiors; a textured carpet with a white ground, spotted with circular green figures. The formally hung curtains were white jaconet muslin extending to the floor, and the wallpaper had a silver backing with a faint green pattern, on which an Oriental luxury scene, a carnival, and a Greek female head were depicted. The stylistic preference of Poe appears to reflect a tasteful version of the European influenced style of the time, where travelling was popularized and interest in ethnic depictions increased. Thus, the eclectic nature of the foreign may be assumed to be a reflection of a more refined taste and intellectual level at the time.

These expressions bare similarity to the ideal chamber defined in *The Philosophy of Furniture*, and are further elaborated in exquisite detail. It is

puzzling why Poe ever decided to write this essay in the first place. Was it because interior design was a trending topic of the time in which everyone had something to say? Or because Poe specifically was a keen intellect who was already designing interiors in his mind that he wanted to circulate. It is also significant to mention that the essay was published not in a women's domain of which interiors are often coined to, but in the men's domain.

This act may have fueled Poe's humorous tone and the significance placed on interior design at the time, although he does mention that the "female loveliness" is influenced by interior lighting in the essay, perhaps from a "gentleman's" point of view. The two-page article that was *The Philosophy of Furniture* was published in 1840, among his other work in the form of tales, reviews, reviews, and articles as well as uncategorized texts. This particular article was published amidst other work on science and art, and reviews on newly published books.

The beginnings of the profession of interior design are often linked to women and especially to a specific woman; Elsie de Wolfe (1859-1950) (Flanner, 1938). De Wolfe is described by *The New Yorker* as the prolific force behind interior design stating that, "Interior design as a profession was invented by Elsie de Wolfe" (Franklin, 2004; Goodyear, 2009). De Wolfe's taste was described as anti-Victorian, and this shaped the style of interiors of the era. Her articles in "Good Housekeeping" and the "Delineator" were collected in her popular publication, "The House in Good Taste" (1913). It is unlikely that de Wolfe would be unaware of Poe's articles and may have been influenced with regard to a harsh critique of the existing traditional utilization and arrangement of interior space, and distinct delivery and language (Franklin, 2004; Goodyear, 2009).

It appears that, the end of the 1800s and beginning of 1900s were times of intense discussion of interior space as social contexts of communication, which led to the professionalization of the field. De Wolfe may stand out as the single name defining the field, however, prior discussions on furniture and interiors may have indirectly contributed to awareness of the significance of interiors, materializing through furniture, surfaces, lighting, and specific focus on the careful and unified arrangement of all interior elements.

## **2. BACKGROUND ON EDGAR ALLAN POE**

Edgar Allan Poe (1809-1849) is an American author and poet who the world recognizes with frightful and chilling popular stories. He was born in

Boston as the second child to two actors. After his father left the family in 1810, his mother died the following year. He was unofficially cared for by John and Frances Allan from Virginia, and lived with them until his adulthood. Edgar and John did not get along due to challenges regarding debt, gambling, and educational payments. Poe was orphaned at an early age, and being detached from his guardian John Allan, decided to enlist in the army in Boston in 1827 at the young age of 18 for five years to earn a living, changing his name to Edgar A. Perry. He was dismissed from his duties due to disobedience, which might be expected.

Poe has been attributed the title of the earliest American inventor of the detective fiction genre as well as contributing greatly to the emerging genre of science fiction. He tried to earn his living through his penmanship and thus faced challenges throughout his life. The author decided to enlist in the army in 1827 when he had already begun his literary career, publishing anonymously, the works credited to “a Bostonian” in the same year.

Poe has published short stories such as, “The Black Cat”, “The Cask of Amontillado”, “The Imp of the Perverse” (where this term has been coined and introduced into language), “A Descent into the Maelstrom”, “The Murders in the Rue Morgue”, “The Premature Burial”, “The Tell-Tale Heart”, and “The Loss of Breath”. His poetry includes well-known works such as, “A Dream Within a Dream”, “The City in the Sea”, “The Haunted Palace”, “Eldorado”, and perhaps most famously, “The Raven”. His other works include, “Politian” which is Poe’s only play, “The Philosophy of Composition” an essay, “The Poetic Principle”, “Eureka: A Prose Poem” (that included a cosmological theory preceding The Big Bang Theory by about 80 years but being written with intuition was considered a work of art and not science by him), and “The Light-House”, which is Poe’s last and incomplete work. His quest for discovery even led to his interest in cryptography, and having placed a notice in the Alexander’s Weekly Express Messenger paper, he invited ciphers that he tried to solve (Art and Literature, 2018; Haswell, 1969).

With his multifaceted interest in life, drawing on connections between fields and challenging methods, Poe has been stated to have largely changed world literature with the first known detective story, “*The Murders in the Rue Morgue*” (1841). One might go as far to say, he has influenced most of the contemporary film and television series programming. Thomas Harris’ Hannibal Lecter and H.P. Lovecraft’s work have referenced Poe as well, and Stephen King who has been largely influenced by Poe has mentioned that this story was

the first sociopathic horror. Due to his embrace of darkness and genius in this manner, he has been much embraced both by the general public, but especially by outcasts with continued popularity (Sova, 2001).

Poe is known to be a free thinker and wrote about a wide variety of subjects in different media and platforms of the time, such as short stories, essays, articles, reviews, and poems. He died at the young age of 40 in Baltimore, found on the street and wearing another man's clothing, in a state of incoherent disarray and confusion. As a reflection of how he lived; his cause of death is still not certain. Alcohol withdrawal, a beating, and carbon monoxide poisoning are all still seen as possible reasons. Before his death, in his dream like state, he called for the name, "Reynolds" who still remains a mystery, as if he was in one of his own short stories. From 1949 to 2009, for 60 years, three roses and a bottle of cognac were placed on Poe's original grave every January 19<sup>th</sup> by an anonymous visitor, who was named "The Poe Toaster". The last time this happened was on the day of Poe's bicentennial (Sanford, 1968).

Poe is known for his grim tales and the spaces he describes are full of mystery and intrigue, sometimes described as Baroque space (Karnath, 1978). Spaces unfold through successive movement, one leading to another with obscurity enhancing his descriptions. Regularity and irregularity of spatial order and form are recurring themes in his writings, and the back-and-forth movement from real space and of the psyche is vivid.

Poe is clearly highly sensitive about the aesthetics of his surroundings and uses this sensitivity as a literary tool to enrich his storytelling, but also to make a statement to the art and design worlds as well. Karnath (1978) states that there is a tension between art and variety in Poe's view, and that unity is a feat to be achieved, through totality and reduction, in part referring to a total artwork, a Gesamtkunstwerk (Trahndorff, 1827). Following Trahndorff, German composer Richard Wagner used the term in two of his essays in 1849, popularizing its use. Referring to aesthetic ideals, the term can be applied to any artistic pursuit.

Another essay that is written in another popular magazine, "The New Path" in 1865 with the author unknown carries a similar point of view, and is titled, "Our Furniture; What it is, and What it should be". Although close to 160 years ago, the author discusses bad work resulting in bad art, and that all good design is constructive, flowing out of the strength and beauty of the structure. Is this not the very essence of the modern movement? Rather than "adornment" the author states that the focus needs to be on the natural result of the actual elegance of the structure. The author refers to the concealment of structure being

“a fatal mistake in the design of all useful objects,” and that just as architecture, construction needs to be displayed.

This is a visionary approach as the anonymous author also criticizes the fact that at the time, the aim in furniture design is to conceal, deceive, and mislead (The New Path, 1865: 67), and that the voice of the journal supports the thought that, “ornament all grows out of and exhibits the construction” (The New Path, 1865: 71). This account brings forward another modern movement quote; “Ornament is crime” famously stated in a lecture delivered by Adolf Loos in Vienna in 1910, at the Akademischer Verband für Literatur und Musik. This was followed by the essay being published in 1913 as *Ornament et Crime* in *Les Cahiers d’aujourd’hui* in French, and in German in 1929 in the *Frankfurter Zeitung*, as *Ornament und Verbrechen* (Long, 1997 and 2009; Rykwert, 1973; Loos, 1962). This well-known statement has common roots to the mental exercise on furniture made in this article, several years before it.

Poe, having published his article long before the modern movement as well as this article in *The New Path* has thus made quite a bold statement in an area of which he was not an expert. The author appears in his writings to be a fearless voice, who questioned life and used writing to collect his thoughts. He was interested in a range of issues about the World which he wrote about in this magazine, such as thunder, the daguerreotype, compressed air engines, phenomena of nature and the idea that everything is connected, humorous notes on rhymes, palindromes, and the miraculous variation of the ocean.

One theme he wrote about in the *Burton’s Gentleman’s Magazine* was furniture, which brings his authorship to the realm of interior design. In this sense, why he chose to write about furniture is not surprising, in relation to his sensitivity about happenings in his immediate environment as well as at the global scale. Although he has adopted a knowing voice in this article, it is also fairly amusing.

### **3. A DISCUSSION ON THE ARTICLE; THE PHILOSOPHY OF FURNITURE**

*Burton’s Gentleman’s Magazine* and *American Monthly Review* (1837-1840) was a publication with origins in Philadelphia. English-born immigrant William Evans Burton was its founder who also was the manager of a theater and an actor. Edgar Allan Poe played the role of both editor and contributor to the magazine from 1839 to 1840. The London-based *The Gentlemen’s Magazine* was an inspiration for this journal although content was more varied. After the economically challenging year of 1837, publisher Charles Alexander joined



Burton's team, shaping content with a gentlemanly, nationalistic and patriotic message. The themes also circled around cricket, sailing, as well as hunting, enriched with illustrations, that made the journal thicker than other magazines at the time. Through poems, articles, fictional stories, and essays, the two men aimed for the magazine to enter every American gentleman's house.

Poe is known as the most famous author in the magazine, writing regularly after applying to the magazine in 1839. Poe was experienced as he was the editor of the Southern Literary Messenger beforehand, and he agreed to provide new articles for each issue, but also editing and proofreading the incoming submissions. Poe published his original tales such as, *The Man That Was Used Up* and *Morella*, as well as writing reviews and working in all other roles in the magazine.

The fact that the title of the article is "The Philosophy of Furniture", enhances the significance of furniture to a worthwhile topic to be presented in a gentleman's magazine. He begins with a quote from Hegel; "Philosophy is utterly useless and fruitless, and, for this very reason, is the sublimest of all pursuits, the most deserving of our attention, and the most worthy of our zeal". By catching the readers' attention in saying what he is about to write is useless and fruitless, he states, this is exactly why one should direct attention to furniture (Pahl, 1996).

This quote used in this way can be compared to Oscar Wilde's statement; "All art is quite useless..." written in the preface of *The Picture of Dorian Gray* published in 1890. In a response letter to a reader, Bernulf Clegg, who asked the reasons for making this statement, Wilde wrote; "Art is useless because its aim is simply to create a mood. It is not meant to instruct, or to influence action in any way...". However, he quickly makes his point; "A work of art is useless as a flower is useless. A flower blossoms for its own joy...". Yet, how profound it is to enjoy a being that celebrates its own essence, with connotations to people stripped away. In this perspective, it is exactly *because* something (philosophy, furniture, art, flowers) does not contain a direct function, that it is worthy of primarily being discussed. Aesthetics or design may readily be seen as a pursuit devoid of utility in the scope of this article at first sight, however, it needs to be clarified that this is a humorous way of approaching the issue. The fact that it is discussed is already a significant choice.

### ***3.1. Definitions of Philosophy***

Philosophy as a word is attributed to Pythagoras (570-495 BC), and is a combination of two Greek words, "philein" and "sophia". This connotes

to a lover of wisdom, and the questions could be in any area such as, logic, aesthetics, ethics, epistemology, reason, value systems, metaphysics, language, and even business, politics, and human relations. Methods of philosophy include critical discussion, systematic questioning, argument, and presentation (Merriam-Webster, 2017 and 2023). Philosophy involves all kinds of learning and is the pursuit of wisdom, through values and reality, based on speculation rather than observation and brings about new questions through systematic mental discussions, exercises, and communications (Encyclopædia Britannica, 2021; *Lexico*, University of Oxford Press, 2020).

A philosophy of furniture would include definitions, connotations, various, meanings, and uses of furniture and interiors, which appears to be worthwhile at the end of the 1800s, as well as today. Whether one agrees with Poe's subjective and clear vision of proper design, it is the fact that he brought it to public awareness, suggesting men to consider certain aesthetic qualities rather than pricing and reputation, is the reason that it deserves attention.

The interior being largely in the control of women, Poe's efforts to bring furniture and interior design to the attention of the public, but specifically (gentle) men is important. He distinguishes between national approaches to furniture and directly delves into the topic critiquing American approaches to furniture. He is wise in that, in the very beginning he states that Americans misunderstand this topic, and this may be stated to free his expression in describing positive as well as negative aspects of other nations in approaching furniture and interior design.

Among mentioned nations are the English, French, Chinese and Eastern, Scottish, Spanish, Italian, Dutch, Russian people, and he also mentions Hottentots from Africa and Kickapoos as native American people. Within the context of the discussion, he also sprinkles effects from the Arab culture, Brussels, and Turkey. While the English were described as supreme, the Eastern interiors are described as warm but in an inappropriate style. The Scottish and Dutch are defined as poor in terms of décor, and Spain as all about drapery. The Russians, for some reason are defined as a nation that does not furnish, and perhaps did not need to. In any case, one can only imagine the author having travelled to these countries and the conditions in which he formed these thoughts. However, because Poe saw himself as a man of the world, and having connection more to all phenomena than to nations, he was distant to all in his description and indeed criticized all in terms of their taste.

However, although an American himself, both in terms of taste and values, he critiques Americans the most when he writes that their value system is flawed



as they value money (“an aristocracy of dollars”) than nobility as in England, with the cost of a furniture piece is presented as the major reflection of its quality. In this definition, a “well furnished apartment” is stated to be preposterous and not aesthetic. The reasons behind this is geometrical continuation of lines as well as arbitrariness. This signifies an equal distaste of Poe towards excessive order and too much chaos at the same time.

### *3.2. The Designer’s Perspective*

After his negative commentary on the American value of a well-furnished apartment with several pieces of furniture in an inartistic arrangement, being derived from its cost and this being a primitive folly, the author begins his aesthetic discussion with lines in a room.

Straight lines, he mentions, are quite obvious and curved ones unpleasantly come together in interiors. Carpets, glare, glass, glitter, windows, verandas, and pictures are the remaining interior elements discussed in the article with mentions of pieces of furniture, such as sofas and fabric, and he concludes this picture with an idealized interior, if there might indeed be one. De Botton discusses this close knit connection between people and the spaces they inhabit in *The Architecture of Happiness* (2006) and the three-part documentary that is an extension of it, *The Perfect Home* (2006). In this book, de Botton discusses happiness, inspired by a statement from Stendhal; “Beauty Is the promise of happiness”.

Nevertheless, can there be one happiness, and how do people’s surroundings shape them, simultaneously being shaped by them might be the core of the question. As materialized extensions of human psyches, the interior one inhabits may reflect much more than can be explained in words. Great leaders in the past knew the power of interior spaces and its components; and one needs only to visit likes of the The Parthenon (432 B.C.), Hagia Sophia (360 A.D.), The Palace of Versailles (1661), or The Dolmabahçe Palace (1843). The unique and exquisite spatial quality of these interiors creates a sense of awe, of belonging and betterment, which was the correlation that de Botton alluded to in his own philosophical assessment (2006).

Curtains and carpets are primary elements in any interior, as they contain, shape, and color the boundaries of the space. This had not escaped Poe, in that he describes the carpet as the soul of the apartment, and states that oftentimes the textures and patterns are mistakenly chosen and used. He mentions scale and proportion at this instance, stating that larger spaces need larger patterns

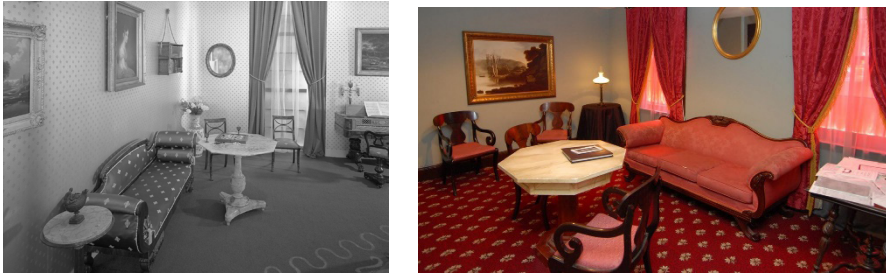
and smaller need the smaller. His observation is quite true to contemporary teachings and practices. He accepts natural representations such as flowers and other well-known figures, however only in the sense that they need to resembling Arabesque styles. Despite the tendency for purification, it appears that geometric and boldly colored patterns are not a favorite.

Regarding glazing, the author begins to discuss this topic through glare, by stating that this is a common mistake in most American residential interiors. Cut glass shades are negatively defined, leading to a distaste of all shiny surfaces and glitter in interior space. Poe discusses the lack of soul in most institutions, once again despising the connection with high pricing. However, the condemnation is balanced with a solution he offers at the end of the article. A perfect chamber is described in much detail as an example to be learned from.

It appears as if this chamber is described with its story, and not just as an interior. Poe's interiors carry this characteristic of being a character in his stories, and not the story is a character in the description of the perfect interior. A rectangular space, approximately, 9 m. x 7.5 m., described as the most appropriate space for the layout of furniture, with one door and two large windows with recesses, opening up to an Italian veranda. Rich crimson silk curtains drape the space, which are lined with gold and silver so as to prevent reflecting the interior. The wallpaper carries the hues of the curtains referencing and beginning a necessary conversation among large surfaces.

There are no mirrors and thus no glitter in this space, but large paintings that are located with regard to scale and proportion, not creating a spotty look. An octagonal marble table and large vases with vivid flowers form focal points within the interior. Although indirectly stated, careful use of scale and proportion, layout of furniture, attention to cultural aspects, sensitivity towards texture and patterns, using complementary color, avoiding glare and glitter, avoiding too much design as well as too little (overdesign and underdesign), and perhaps most importantly deciding on the value of design based on its merits, context, and attention to detail, are all exceptionally contemporary guidelines of interior design.

A chamber that was designed according to Poe's idealized description was exhibited at the Brooklyn Museum during the 1959 exhibition. Likewise, the reading room at the Edgar Allan Poe National Historic Site has created a chamber based on "The Philosophy of Furniture", and is the only furnished room at the museum. The room includes the octagonal table, carpets, paintings just as Poe describes as the ideal space in his article (Figure 3).



**Figure 3.** The recreated ideal interior in “The Philosophy of Furniture”, at The Brooklyn Museum exhibition; Edgar Allan Poe Room, 1 March-21 June 1959, Brooklyn Museum-Decorative Arts Collection, 1959 (left);

The Edgar Allan Poe National Historic Site in Philadelphia, 2023 (right)

#### 4. CONCLUSION

What Poe would have to say about the Modern Movement, with the International Style taking hold of the world in the times that followed his passing, one can only speculate. It is not probable that he would appreciate the “less is more” mantra of Mies van der Rohe in 1947. One wonders what the author would think of the Barcelona Pavilion or the Barcelona Chair (1929), attributing the pureness to a clinical style and to the Germans. How about Villa Savoye (1931) by Le Corbusier, or the transparency of The Glass House (1949) by Philip Johnson? A fellow American himself, how would he describe Fallingwater (1935) by Frank Lloyd Wright or indeed the ramped escalation within The Guggenheim Museum (1959) by the same architect? Perhaps, he would set aside his nationalist approach and criticize the wide spread likening of the architectural language, as it is for certain he believed that spatial formation, with all its amenities, functionalities, and individual elements, is a powerful language. He might have asserted that furniture can speak, with messages and connotations through scale and proportion, textures, and color, stating that furniture design as a language had something to say about philosophy as well.

It is not surprising that each person, whether from the furniture or interior design profession or not have a word or two to say about interior design. After all, one is completely arranging and rearranging furniture, adapting their own interiors to changing needs in the interiors they inhabit. Poe was critiqued at the time by peers who stated that he was tackling a topic of which he was not an expert. Worldwide authors such as, William Butler Yeats, Ralph Waldo Emerson,

and Aldous Huxley have criticized Poe's work in general, stating that the works were vulgar or there was not much merit in them. However, the author distanced himself from feedback of this sort, and it might be stated that this was the very essence of what set him free and apart from other writers.

In this atypical article, Poe adopts a lighter view, humoring the topics of furniture and interior design, and yet putting them into the much-deserved spotlight of men, of the public, and of the world. Since his text indicates that there is a right way and a wrong way to interior design, this paper might be accepted as a piece that falls within the modern approach, adopting particular rules of interior design detached from national traditions and applications.

Today, there is little disagreement in terms of whether or not furniture and interior design is important. With reference to this personal, humorous, nonconforming literary article about Edgar Allan Poe's views on furniture and interior design, it is possible to connect disciplines and understand the stylistic tendencies of the time as well as make links to today. Other direct literary works on furniture and interior design as well as indirect ones through rich descriptions analyzed from the designer's point of view, may enable interdisciplinary understandings and enhanced original output, contributing to both literature and design fields.

Perhaps the strongest statement presents itself in the article as; "As we grow rich, our ideas grow rusty...". The author values careful thought regarding furniture and interiors, and sees them as a reflection of society. One might also state that the opposite is also true, that society is a reflection of its interiors as well. His approach towards existence is one in which interdisciplinary connections, intersections, and overlaps enrich one another, and no clear borders can be seen. One might refer to the author's quote, "the boundaries which divide Life from Death are at best shadowy and vague" from "*The Premature Burial*".

This quest for wisdom at the heart of philosophy is the reason Poe carries furniture to the spotlight in a gentleman's magazine. The Philosophy of Furniture is perhaps really a philosophy of society at large, and a philosophy that necessitates careful attention throughout time as can be observed, continuously evolving. Thus, beginning with education, immersed in the interior design profession, and especially from the designer's point of view, ultimately asking questions is necessary, indeed in addition to an in-depth philosophy of furniture and interior design.

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## CHAPTER II

# ON THE TIME AND REALITY OF FILM SPACES: THE STAR WARS EXAMPLE

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### 1. INTRODUCTION

Cinema is a medium of communication. The story created by this medium of communication establishes a relationship of time and space with the viewer. In this relationship the reality of the story is represented through the time of space.

The story is the location where the story was fictionalized and the time that passed in this space is the reality of the film. The space defines the reality of time and humans together. The space, which in essence assumes the aim of sheltering humans, separates from the essence at this point and is transformed into a medium on the path to creating reality. The space on the film screen is a fictional space set forth to create reality. This article assesses the medium that space is based on in the *Star Wars* films and questions how much the film relates to the messages it wants to convey. At the essence of the study is the seeking of the reality revealed with the images about time of the spaces produced in the cinema.

The study focuses on developing a philosophical context between the phenomena of time, space, and reality to approach argumentative debates on film spaces. Film, as a medium, is an existential entity that creates its own reality with visual spaces in specific times. In this respect, the theoretical background of the study is based on philosophical argumentations on the essence of time and space. The main argument focuses on the essence of an image experienced through the time and space of the film. The study is based on critical thinking, therefore to develop arguments, premises on time, space and image are analyzed in the terminology of philosophy. Initial arguments cover the problems of perception



and how humans perceive time and space from a phenomenological approach. In this phenomenological context, the study discusses the developmental process of reality in the human mind. Within this context, the study mainly takes references from Merleau Ponty's leading study on perception dealing with issues of body, sense of experience and essence of consciousness. The main work of Ponty's 'Phenomenology of Perception' is taken into consideration in this study because the arguments presented on the body, experience and the consciousness are very similar to the approach of a designer. A designer considers the user experience and designs the space in his own consciousness before its physical existence. The process can easily be named as creating an existential reality. The study especially focuses on these relations in order to define the process of developing a reality in an ideological attempt. In this approach, there occurs an automatic differentiation between physical space and the space that stands in the mind of a human. There is a similar tangency with the space of film and the real space, and this creates many potentials in both understanding the reality and defining it. In this point the phenomenon of time takes a crucial role as a deterministic element in defining reality.

The debates on time in this study take their initial references from the study of Henry Bergson's 'Time and Free Will'. Bergson mainly defines time in terms of 'concrete duration' and 'abstract time'. Especially in his arguments about abstract time, he defines the term 'dure', which is defined as a period of time as experienced by a human. This period of time mainly captures the old and new images of the world in the same level of consciousness. Rather than a linear understanding it is primarily both heterogenic and continuous. The terminology is very similar to the space used in the medium of film, as it captures very different dimensions of time; time of the film, time of the audience and experiential time that is derived from these interrelations. The study thus bases itself on the argument that space, time and reality create an essence of experience that then becomes the image in the human mind. Film stands for the image that contains both the space and the time components. In this part of the study, the works of Deleuze on film and image takes an important role. Gilles Deleuze is a recently well-known philosopher who mainly developed arguments about cinema. According to him, cinema is the reflection of contemporary thought and the medium for image production of new definitions of life. Taking reference from Bergson, he develops the concept of cinematographic image and divides this image into two categories as the movement image and time image. The movement image has the subcategories of perception, affection, action, and

the mental image. He Especially gives cinema essential value and calls it ‘the movement of thought’. By referring to the Deleuze framework, the study aims to captures the experiential reality image in space and time of a film scene. To sum up, the study mainly aims to develop a theoretical context between time, space and reality in the medium of a film. Moreover, with the help of this theoretical context, it develops a critical analysis on a specific example. The study focuses on the image production and its relation to reality through a science fiction film, Star Wars. It presents a rich image library with its identical (unique?) story. The reason for the selection of this example is not the long-term fame of Star Wars, but its ability to create its own contemporary culture in the era of cinema.

The space defines the reality of time and humans together. Every time this reality can create an endless number of new definitions through the functions made in the space. The definitions formed in the space write their own story. Space producers, almost like directors, bring to life previously in their minds the function that would be made in that space. In this bringing to life, the potential realities of the space create their own time. Whereas physical spaces are defined through the unities of the movements and mechanical elements. Every one of the light levels, the relations of lights and colors, forms, textures, sounds and volumes of the space assume one each role and write the scenario of the space. Sometimes space designers have light play the leading role, sometimes colors, sometimes textures and play a leading role together with color and the others are assistant actors. They can also play leading roles by establishing a pattern together of all the elements. In other words, space designers see in their own minds how every movement would be realized and construct a three-dimensional composition through the relations with each other of the elements, which constitute these movements and space. Whereas, the fourth dimension, which gives reality to this composition, is time. The moving formations within the space determine the time of the space. Space and time act together and are transformed into each other.

Time in space has different layers. First there is the cyclical time experienced by humans who use the space that represents the action of the movements of this time. Second, time is the linear time indicated by the components used in the space, that is, they show the point stopped at in the historical continuity of the space. It defines the reality of humans and space and the context within reality with the layers formed by the concept of both times. We form a place about that space in our mind through these definitions or prefer not to form a place. Most of the time, these preferences of ours are the experiences we have obtained in the

past and connected with the culture we received within the place. The relationship of space, humans and time is the totality of extremely complicated relationships.

## 2. ABOUT SPACE and TIME

Undoubtedly, multi-definitions in extremely different fields are acquired in the expressions about space and time. The space in the scope of this study prepares the foundation for reality, while time and humans influence each other. As also stated by Roth, space constitutes extremely layered and different contexts: physical, perceptual, conceptual, behavioral and personal (Roth 1993). The definitions about the perceptual essence of these relationships have been one of the important subjects of philosophy. The arguments about space and time have been based on ontology and phenomenology. In the work titled *Phenomenology of Perception* where Maurice Merleau-Ponty (1962) considered the essence of perception, the body, mind and the knowledge perceived by the mind are parts of the whole. In this context, the mind, through the experiences perceived by the body, orients towards understanding the world. Especially, Ponty's body and in the world he perceived sets forth a situation, which is realized in the perception of the space by the users themselves. Space, more than from the built physical environment in which people live, exists within and consequently, it is an environment, which is surrounding themselves where they continue to live. Undoubtedly, these arguments are also formed in the context of the shaping of the built environment. Even if the starting point of these arguments is not based on Ponty, the human action and perception, which lies at the essence of the processes of space design, no doubt establish an extremely strong context to the approach of shaping the space. Of course, this situation becomes visible differently between film and viewer and the space within the film is a space in which the body of the viewer does not exist. However, the perception of this space is formed in the mind. Also, it can be stated that when the space time of the film is added to the own space time of the viewer in this perception, then actually, the experience formed is a very personal interaction. By departing from Ponty's space and body-based cognitive perception, the reality formed can be reached by the inference at the conclusion of the original perception of the viewer.

On this point, it would be important to transfer the arguments of *Being and Time* published in 1971 by Martin Heidegger within the space and time arguments. This work, which was written before Ponty's studies, presents the problem of time and space with a phenomenological viewpoint. Heidegger's

statement starts by asking questions about “we should bring onto the agenda once again the problem of the meaning of existing”. He defends that only to exist by focusing the mind on oneself is incomprehensible. In the relationship of mind and existence, the mind exists in the world and is an existence, which is in interaction with the world.

*When being and space are mentioned; we think as though beings are standing on one side and space on another side. However, space stands outside for beings and is not an independent thing from beings. Space is neither an external object nor an internal life. There is not a space outside of them with beings, because when we say beings and being of these words, that is, when we think of being in the dwelling meaning, even now, with the word being, we are explaining the residence in fours of things (Heidegger 1971).*

According to Heidegger, the meaning of existence is found in its own world and time. No matter how impossible it is to transfer studies with such reduced sentences, the importance of the time in the existence of the mind is in the direction of supporting the perception of reality. Humans, whom he defines as “dasein” (being there, presence, existence) in place of mind itself, sets forth with contexts of those between difference and to be in the world and entity, to know, to look, to be that also passes beyond the human mind. The concept of dasein does not focus only on the state of existence and time is defined as the internal manifestation of the conscious. According to Heidegger, this internal time, more than being linear, is the times remembered and finding to summon now the orientational and envisaged and is related to the future. In other words, the present time shelters within it the future and past (Direk 2020).

Whereas Henri Bergson is another important intellectual, who formed the foundation for the philosophical studies made on time and cinema. Bergson, with the book *Time and Free Will* that was first published in 1889, considered the relationship between the levels of consciousness and the free will of the mind through the concept of time and gave two separate definitions: the experienced time and the universal time. Bergson’s time confronts us as one of the characteristics of the dynamics between the existing experiences in our consciousness and our internal world of the existing world in reality (Bergson 1957). The subjects of consciousness and memory are focused on in the philosophical approaches. These concepts are placed as arguments in the concepts related to consciousness. According to Bergson, the consciousness moves within the space and can only be understood through space in time.

On this point, there is this world in which our space is found and the existing social relations in this world. The consciousness is seen in this space, is touched and comprehends the moments lived. The concept that Bergson dwells upon the most is physical absolute, and the “dure” period concept, which is separate from the worldly time. The concept of period joins the argument on subjects of memory and defines the period of every moment formed/the condition of flowing in the universe. This period is heterogeneous and continuous.

In this manner, when Bergson sets forth time as an experience, which is connected to mind, the concept of period starts to acquire importance; it describes the existing time as original in the perception of internal time of the previous, final and starting experience. It is observed that this expression, which is formed on the mind and object of the qualitative and quantitative characteristics of time, which are formed on the memory and time, constitute the intellectual foundations of the present-day cinema and world of art. These approaches were converted to a layered perceptual understanding in later periods, and the arguments moved on time, space, perception, comprehension and knowledge were based on the concept of memory. According to Bergson, in the formation of reality and time, our mind is presented with a summary of what could be perceived in the world surrounding the bombardment of information in our memory and we comprehend in this manner (Bergson 1919). “Consequently, mind and object, more than an extension of the issues about unities and difference, should be set forth with the time terms” (Bergson 1919 77). Internal time/period has many kinds/varieties of the personal and qualitative. The period is described as a heterogeneous internal moment, which does not have sharp boundaries. The study *Matter and Memory* (Bergson 2007), which was published in 1896 in pure language that could be qualified as a continuation of the study *Time and Free Will*, which was published in 1889, carries to an advanced point the arguments with the assertion that matter arises from memory (Bergson 2007). The world is mimicked as an intuitive space rather than being rational and subsequently, even if much was gained in the fields of intuition and perception experience in scientific developments, the concepts produced by Bergson form the foundation of the philosophical theories of cinema.

It can be stated that this study, which makes inferences on space and time in cinemas, is also nurtured from Bergson’s arguments. For instance, it can be stated that the space setup, which forms the main context of the cinema, is the characteristic of time. On this point, even if the period concept set forth by Bergson is the datum of a more internal perception, one of the

data formed by this perception is the space itself. Especially, the elements, which form the relative perception about a space, can be thought that this perception forms an important source of information, which is also formed by the historical codes they have themselves. In other words, it is in the direction of supporting the claim that the space itself and consequently has an effective role in the period concept, formed at the essence of the perception of those that are united.

No matter how much the focus is not on space and time, the most intensive arguments in recent history about the cinema are expressions on “images” of the cinema formed by the intellectual Gilles Deleuze. The intellectual who especially treats the cinema itself as “a movement of thought” characterizes the cinema as an activity that is “concept creating” at least to the extent of philosophy. According to Deleuze, the cinema is an expression of modern life. On this point, Deleuze puts the cinema at such an important point that according to him, the cinema is the shaper of new art, new forms of thought and in this manner, the new forms of perception.

*Cinematographic image is the name of an image, which moves by itself, which makes negative on itself and by orienting to the center of thought, it makes those who do not think, give pause to think (Sütçü 2014 p. 15).*

In contrast to the other arts, the image displayed by the cinema does not only represent a visual object, at the same time, it can set forth multi-layered information, time, society, politics, briefly, all kinds of elements, which constitute culture, which exists within itself. Deleuze puts into words himself these expressions and forms of perception read upon “cinematographic image”. Whereas cinematographic image is transferred through the two main concepts of movement image and time image (Deleuze 1986).

If we start from the description of image on this subject, “image” is what moves according to Deleuze. Everything in the universe is an image that moves. In this manner, matter, image and movement are equal and are separated from each other only in the context of them being images in different types. Whereas, the time image flows linearly, and breaks off from the consecutive time concept, which is constructed on the priority/after and is closer to the introverted time concept by Bergson. Deleuze’s time image is in the essence of cinema and is at a point closer to the concept described as “period” by Bergson (Deleuze 1989). In this context, the space in cinema is an image, whereas time is configured through an internal reality of the image of this space. The reality of the essence, which follows the space, is orienting through these two images.

Whereas, when we consider the cinema and period through the eyes of viewers, different dynamics become a part of the activity. The viewers, rather than being those who watch in the dark, become observers (Ellis 1992). This experience is different from a normal viewing activity.

Time at this point plays an important role by defining a new formation in the perception of reality. According to Bayraktar (2018), whichever time is transferred within a cinema film, let it be transferred, it also passes now the experience of the viewer is watched. However, the time perceived forms a reality that is closer to the period concept by Bergson. Rushton defined the period with a stance close to this as follows: “After the moment of watching begins, viewers start ‘to live’, which is ‘assimilated’ by them and draws them into the film; as of this moment, the time experienced covers all the times visited among the past, today and the future of the film” (Bayraktar 2018).

Emphasis is placed on the expressions of Juhani Pallasmaa, the architectural philosopher, on the strength of space, from the important characteristics of the perception of time in the watching action. The intellectual, in the contextual relationships established between architectural space and cinema, focuses on semantic layers more than the physical characteristics of the space. Juhani Pallasmaa (2001) characterizes the film spaces as the spaces coming to life in the minds of directors and designers and holds similar the production of architectural spaces and cinema spaces. Pallasmaa’s space is the entire meanings passing beyond the spatial physical characteristics, which are stated to exist completely with the images carried in the essence of the space and the meanings sheltered within them. However, on this point, the physical space experienced in the perception of the viewer and the spaces of the film are separate from each other. While one is perceived physically, the other becomes manifest in the minds of those who watch. It can be thought that in this manner, all the meanings that could be taken on for the cinema space, which exist as an image in the mind, could acquire a subjective value to the extent of Bergson’s period concept.

Bergson’s period concept, Heidegger’s *dasein* concept, Deleuze’s time and movement image are debated through an inclination, which is internalized belonging to mind. Whether it is a fictitious cinema film space or a space, which is produced as a physical built environment, it has an interior and infinite movement in the context of reality sheltered within.

This study selected the *Star Wars* film to look at the context established by the abstract concepts formed above by the time, space and cinema relationships. At first glance, even if it appears to be contradictory to prefer a film series



transferred to a symbol of the commercial culture after such philosophical discussions, without doubt it is a film that has an effect in directing the esthetic perceptions of our age. By departing from Deleuze's considering the cinema as an expression of the modern age in the ideational context, it can easily be stated that the images created in the world by the *Star Wars* films form the culture of unique esthetic values in this modern world.

Especially treating within different historical, temporal constructs the social, political and cultural events of the periods produced in the representations about space and construct of the film, makes readable the time and space relationship, which is the foundation of the study. Besides the name of the project constructed as the "Strategic Defense Initiative" being *Star Wars* that was made into a project during the cold war period experienced with Russia in the 1980s by the United States of America President Ronald Reagan, the fiction of burning with laser beams the ballistic missiles sent from outer space is equated with the fiction of the film. This project took its place in history as a science fiction product. Subsequently, the themes of the *Star Wars* films became the representative of spaces and times, which included clues about very different civilizations. The undersea cities, temples, skyscrapers and natural environments form an extremely broad time and space perception. Consequently, through the variety of space and time fictionalized by the *Star Wars* films were a strong representation, which showed that they could define new realities.

According to Jean Baudrillard, "This age in which we are found is only making itself known through reflections flowing from the eyes of a camera. In a sense, cinema and television form the necessity of the age" (Büyükdüvenci and Öztürk 1997 p. 14).

### 3. *STAR WARS*: SPACE and TIME

By continuing with the space discussions, which were started in the previous section of the text, when film spaces are under consideration, these complex relationships become somewhat more stratified. First, the unity of space and time of the cinema within our existing time, no doubt creates its own time and reality. The internal time of the viewer, the time of the film and the time of the spaces included in the film could be at different points from each other. Spaces can reflect their own time of the film, not the real time. When the reality of the space is parallel with the time of the film, then it can support the consistency of the construct. No doubt, the perception of time determined in the



experiences about mind given in the expressions by Bergson and Heidegger, add new layers to the definitions of time and reality of the cinema.

The time experiences about the mind, as given place in the text, call to the present time and with orientation and foresight are related to the future.

Whereas an important point that should be emphasized is the form of reaching viewers by spaces; the spaces were experience in the cinema are not real four-dimensional spaces, they are two-dimensional spaces that we observe. We do not view the spaces themselves, but their representations. The film spaces are fictionalized and representative spaces. The space viewed is not experienced, it is perceived as a moving image. Usually, there is more than one space image sheltered within the film. These moving images serve the function of mediation for the message aimed by the film. A space that is leaving a mark in perception does not form experience, it only forms the entirety of these images observed. The connection formed between images and users produces new realities about the film in the perception. On this point, the space of the film can be characterized as the basic tool in the formation of Deleuze's movement image and time image. It is the characteristic in the production of image. With the definition by Deleuze, the space of the film is the image itself. Milcho Manchevski emphasizes the filmmaker in the determination related to these multi-layered relations, "the aspect that fascinates me of films as a tool are the opportunities presented on playing with time and the filmmaker's transforming time to outer space" (Quotation from Sütçü 2015 p. 125).

The situation changes somewhat when science fiction films are under consideration. The images about space, especially present themselves in a fictionalized reality outside of our time. Thus, just at this point, the consistency of the reality of the space construct assumes an even more important role. It is expected to present itself with a new image in the place in this new world, which is established in complete contrast to other films. The science fiction films are formed on constructs that are new, unknown, and still unfound in our perceptions. This is one of the most important factors that makes these films attract attention. New worlds are established in this film genre where creativity is in the forefront.

*Star Wars* also has worlds unique to itself. The *Star Wars* series has fictionalized these new worlds in eight films in a period exceeding 40 years. *Star Wars* has not only remained as a film series within this period, but an infinite number of materials have also been produced through it. Cartoon films, games, products, etc. have come together with the viewers to a very broad extent. In

this manner, *Star Wars* in the present-day, beyond being a film watched, has been transformed into an icon which is formed belonging to its own culture. The adventure, which started in 1977, confronted us with the first trilogy. In the statement by George Lucas, the director and scenarist of these first three films, it was aimed for the film to be “exotic” (Lucas 2012). Lucas says that there is a mythological structure in the films. In essence, it is also emphasized that the films define a new social order and within this social order, it is presented in the historical context of mythological elements (Maltin interviews Lucas 1995). The scenario of the film develops on conflicts between two opposite groups of the good and the bad. There is also place in the scenario for religious references. Especially, it is observed that theological facts about the Buddhism belief are used when transferring the life philosophies of the Jedis, who constitute the main heroes of the film (Feichtinger 2014). Furthermore, the matching is also strong between the Jedis and the samurai films, determined to remain under the influence of Lucas. Whereas, Hans Solo, who is one of the most important characters of the first trilogy, is a Western outer space cowboy. However, a parallelism is not observed at all among the very different resources belonging to the existing different cultures in the film. When the pattern of the space is considered, a parallel selective manner is perceived with this situation; a great number of planets and a new world about every one of these new planets and consequently, new space constructs confront us. With this selective manner, new realities are created within the films’ varying spaces and varying time patterns. In the process of the time internalization of the mind, all these images, which are produced outside of our real reality, add a new layer upon our reality.

To direct outside of these contexts, George Lucas also carefully studies the formation of a memory about time with the technological innovations presented within the films themselves. On this point, time is removed outside of a conceptual evaluation and more than being an inference stemming from the film itself, it plays a characteristic, determinative role on production techniques. It witnesses its own production. Lucas describes in his interviews the film as a union of art and science. Even if he says himself, “it is a film related to thoughts not related to techniques”, technological developments can easily be read through the film (Lucas 2015). Every film exceeds itself with new techniques. Many directors emphasize that *Star Wars* is avant-garde for innovations in the film sector. The Oscar was given to John Barry and his team in the branch of art directorship with the first film made in 1977. In interviews with Roger Christian, who produced the set decors, he stated that they expended intensive efforts for

making the objects used in the sets as close as possible to reality. He transfers this thought with these words, "First we designed the robots and later the sets. We did not want anything used in the set to appear to be plastic" (Christian 2016, 2018). They used airplane and machinery scrap-metal parts for the outer spaceships sets designed.

When we evaluate all these elements in the film in the context of space, time and reality, then it is observed that there are not many different kinds of unities existing. When both the years when the first trilogy of the series was made and the budget of the film are considered, then very new constructs were not presented in the context of spaces. Natural elements are dominant in the general space themes of the films. It can easily be understood from the statements by Lucas and from the film that the first film, which was taken in Tunisia, was coded with the theme of desert/sand and sand colors. The second film was coded with the snow/white colors' theme, whereas the third film was coded with the forest/green colors' theme. Lucas says that in all the films, warm and lively colors were preferred for the space and costumes of the good ones and that interior cold and colorless black with white was coded for the bad ones. On this point, it is observed that in the film emphasis on the contrast between the good and bad characters was strengthened with the use of colors. The good ones wear more natural costumes, whereas the bad ones wear more artificial costumes. The new space construct, which is the most striking in the first trilogy, shows itself in the inner spaces of the spaceships. These spaces are removed outside our everyday time and present new realities. These spaces where machinery esthetics have priority, were constructed to define a time in the future. While the other natural environments used easily reflect the time and space when the film was issued, the spaceship context time is outside of reality. The existing contrast between the two spaces captures the emphasis of the future time and is a strong means.

It is observed as of the new films taken in 1999 that place is given to a great number of designed spaces. The spaces used repeatedly in the films are the Jedi temple, the galactic republic meeting hall and the death star. Other than these, it is seen that there are new space constructs suitable to the theme of every new film. An example of this situation can be given as the fantastic world Naboo city, formed undersea in the film taken in 1999. Naboo is a city existing of life spaces formed from transparent spheres undersea. These spaces, which have a unique format language, distance the film from the reality of time, but do not carry a technological reference for the future. The fact of reality of the space is given

through a different formatting language and on this point, the time context does not have an effective role in the construct.

When we treat the spaces used repeatedly in the film, we observe that the Jedi temple shelters many different formatting languages together. The elements taken from history are in the forefront in the spaces included in the temple. Especially, it is observed that these elements used are elements taken from ancient period civilizations and repeated in a revitalized manner. It is difficult to say that there is a new interpretation by the designer in these elements. It is in the *mastaba* (house of stability, house of eternity or eternal house in ancient Egyptian, a type of ancient Egyptian tomb in the form of a flat-roofed rectangular structure with inward sloping slides, constructed out of mudbricks) form, which is structural type belonging to the ancient Egyptian period. There are towers on top of this *mastaba*. Although there is not the use of towers in ancient Egypt, it is also observed that these elements have been added on top of each other. When the images included within the structure are evaluated, ancient Roman period columns and arches, Renaissance period decorations and surface decorations, which are not belonging to any period, are perceived within each other. A time definition cannot be made through the context formed by historical periods in the spaces. Even if these building elements also belong to historical periods, it is obvious that a consistency was not considered in their use together. This eclectic manner could have been used for emphasizing that the temple is based on a history that is a very fundamental and far in the past. The interior spaces at the temple are extremely high. The use of exaggerated high ceilings represents reaching to the heavens in temples throughout history. Whereas the most accented examples are observed in the Gothic period. The metal columns used in the meeting hall located at the temple, even if it creates a technological image, the column itself is an historical element. It can be stated that the eclectic manner existing at the temple creates a consistent reality with the manner standing close to the mythology of the film. This reality brings the time of the film to the past. The film, besides the ancient periods, gives place to formal quotations from the recent historical periods. In the apartment of Princess Amidala, furniture was used that belongs to the *Art Deco* period, which was observed intensely in the 1940s. The spaces, which observe the high city in large openings in the apartment almost remind one of the *Art Deco* spaces used in the New York skyscrapers in the 1940s. The revolving surfaces, which were used extensively in the *Art Deco* style, are perceived in the linear decorations included in the accessories. Furthermore, the use of metal colors is

also emphasized as the representative of contemporaneousness in materials. It should be stated repeatedly that the historical elements about the apartment are quite varied, and this diversity is located within the same space. The only time emphasis it carries should be belonging to past periods. They do not provide references to each other.

On the other hand, it can be stated that at the meeting hall of the republic an extremely technological image is dominant outside of this manner. The hall digresses from the prisms, which exist in our perception of traditional volume and defines itself with a sphere. In this space, people are placed at the periphery of the sphere and the meeting administrator is placed at the center. In this space, which emphasizes the centralistic form of the world, the seating balconies of the senators are moving, and they are within an interactive relationship with the speaker. The use of this space is in harmony with the functions made. It can be stated that no matter how much this construct reminds one of the arenas in the ancient period, the materials used, and the format language have a contemporary appearance. Viewers in the film watch the temple and the meeting hall immediately after each other. That is, the film presents within each other the representations of different times in the same film. An historical flow is displayed simultaneously in the film with the opposite aspects of the existing temple and meeting hall. In this manner, a strong contrast is formed between the old and the new.

Whereas, the Death Star has a design, which indicates an extremely advanced time. This structure that is in the shape of a sphere, is the outer space station of the empire. More that presenting new definitions of spaces kept beyond time, it is the idea of living in the outer space void that are presented with the materials used and the construct of the operation of the space. A new perception of space is not created in the 1999 production, which is another science fiction film, as in the example of *Matrix*. In the *Matrix* film it presents a new form of existence, which emerges with stratification, and which shows movement within the space time in the film. Whereas *Star Wars* creates reality through the references mostly about shapes. Departing from this point, it is difficult to say that the reality created by the *Star Wars* film is a new reality that was not set forth previously.

#### 4. CONCLUSION

When we consider the *Star Wars* film in general to the definitions of reality through space and time, it is clear that it presents extremely different variations.

Sometimes the spaces are new old times; sometimes the spaces and times are new and sometimes the same space is presented together as both old and new together. This variation in the space is observed in the colors, in the fabrics, in the shapes, in the forms and in the illuminations. The use of historical elements is the point of departure in coming together of these colors, shapes, and forms. Perhaps the diversity of the compositions formed is even the cause of time shifts in the perception of viewers. The space images presented in the film do not break off much from our existing space. It can be stated that the most important factor in the popularization of the film is its eclectic manner in the essence of the film. Perhaps more than the reality layers in the relationship of space and time discussed, is that the film establishes a strong relationship with the viewer with its manner, which does not break off from the present time and this situation is effective in its popularity. *Star Wars* in its existing world, does not break off from our reality. This world presented is neither very new nor is it at an advanced time that does not exist. In this manner, even if it has a multi-layered and eclectic manner within itself, it is usual and real. In this context, it can be thought that it stands at a point that is distant from being a science fiction film.

We can state that when it is seen through the eyes of a space designer, more than a consistent reality arising from the relationships of space and time in the *Star Wars* films, it is a coincidental reality that arises from inconsistency. However, to the question of was this the aim of making the *Star Wars* film, it would be beneficial to listen carefully to the statement made by George Lucas, “I created *Star Wars* for children who 9 years are old. If adults enjoyed it, then it is not my fault” (Lucas 2012). Krzysztof Kiesłowski stated, “The cinema does not change anything, but it paves the way for people to understand many things. It is not films, which would change the world, it is people who watch those films” (Kiesłowski,)

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## CHAPTER III

# ART-INSPIRED SPACE STRUCTURING IN MOVIES

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### 1. INTRODUCTION

**D**escartes (2014) defines as a form with dimensions and is quantifiable; however according to Aristotle (2014), space is a phenomenon independent of matter and form, and according to Kant(2013), it is an intuitive concept that cannot be sensed by the senses. Thinkers such as Heidegger (2004), Ponty (2016), Bachelard (2018) argue that the body and mind are immanent to each other, and this establishes a relationship with the physical and mental elements of the space. According to Lefebvre (2014), the space also has social, cultural, political and economic aspects that connect with the society. In addition to physical factors such as light, sound, color, climate, it can be said that the period, social structure, cultural environment, social, political and economic parameters are planned together. The concept of space, which is related to and nourished by many disciplines, is the main expression area of architecture.

Architecture is concerned not only with the measurable physical dimensions of the space, but also with the side experienced by being perceived by the senses. Perceiving the place in a sensory sense, in other words, experiencing the space, is also related to the conceptual side, i.e., the representative direction, as much as it is associated with the dimensions of the space. Henri Lefebvre (2014, p. 71) argues that spatial representations, also known as conceptual spaces, are environments that are



made by urban actors, such as planners, architects, urbanists, technocrats, and artists, utilizing specific codes and standards. In other words, the conceptualized space is a representation, and it can be fed by the presence of representations from various visual expression areas. For example, the image of “home” can be thought of as a representation area, based on the semantically and physically strong context of the space in daily life. The bond established by people belonging to different cultures, different geographies and different times with the “home” can be considered an experience area beyond being physical. People use the “home” as a means of both shelter and self-representation. This representation is provided by different forms of art. Based on this fact, we can say that space and art can be evaluated as concepts that shape and give meaning, and integrate with each other.

Art, which has existed since the existence of humanity, sometimes starts with inspiration, sometimes with a line or color, and sometimes with a rebellion. It exists with people, touches people, absorbs people, and envelops them. It connects with the place, witnesses history, and opens and closes an era. In this context, the relationship between art and human cannot be considered independent of space.

Today’s world, where change is accelerating in many fields, has made an environment in which various expression and representation methods rapidly evolve in the field of art inevitable. This situation is also reflected in the relationships that art establishes with space. Parallel to this, the mediums of expression established by art through spatial representation have also diversified.

## **2. Space in The Intersection of Art and Cinema**

When we examine at the forms perceived throughout history to comprehend the current position of the link established by the concept of space with art, we can see that it is a layered flow that feeds on each other. Even though the concept of space existed in the pre-Renaissance period to fulfill the most basic need of shelter, human beings have always used various expression methods to realize themselves. Cave figures in Lascaux, giant landscape paintings in Nazca and hieroglyphs in Egypt are among the most well-known examples.

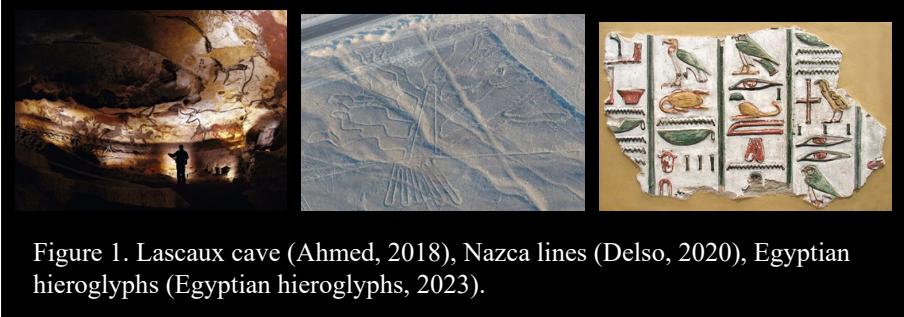


Figure 1. Lascaux cave (Ahmed, 2018), Nazca lines (Delso, 2020), Egyptian hieroglyphs (Egyptian hieroglyphs, 2023).

The liberation atmosphere that began with the Renaissance in the 14th century also influenced the relationship between art and space (Shiner, 2013). From the locations where art is exhibited, it has evolved into approaches in which the interaction of art with society is at the forefront, and the union of art and life is aimed at.

Ahu Antmen (2009, p. 18) states that the world began to take on a completely new face after the Industrial Revolution in the 18th century with the discovery of new modes of transportation and communication which introduced that were previously unimaginable in human life. She argues that this is the main reason for the artistic changes we witnessed in the 19th century. In this direction, when considering the transformation of traditional means of expression in art, the parallel to this situation, the change in the relationship between art and space draws attention.

While artistic practices underwent an intense change in the cultural transformation of the 1960s, the structure, rules and boundaries of the spaces where art is exhibited were gradually forced, bringing a new understanding in which the work is intertwined with the space and the space becomes a part of the work (O'doherty & Antmen, 2010, p. 10). It is possible to count the viewer's transformation into a participant who completes the work with her experience as a sign of a change in interior space. In this process, artists have been the pioneers of approaches that include space in art with their discourses. Spaces that are reproduced with digital infrastructures started to be in question as a result of new expansions in the time between art and space brought about by computer technology, which was first deployed in the 1980s. In this context, concepts like virtual reality, artificial intelligence, internet art, and the metaverse, which are currently topics of discussion can be considered interactive area of experience that allows the audience to open an alternative window to the consciousness of their presence within the space of art.

Looking at the relationship between art and space in all this historical flow, it is clear that the understanding of art liberated by social transformations is increasingly expanding its boundaries. There is a situation where physical and mental boundaries are blurred by intertwining with the contribution of technology and media tools, which started with the industrial revolution and evolved to unmanned technologies today. At this point, cinema is in a more advantageous position than many representative methods because it has the opportunity to benefit from both art and technology in its own context. Ricciotto Canudo, who for the first time described cinema as the “seventh art,” (1919, as cited in Yıldırım, 2022), said: “Cinema comes as the renewer of all styles of artistic creation.” (1922, as cited in Yıldırım, 2022). Thanks to this opportunity, we can observe the relationship between space and art through movies, which is one of the most effective areas of visualization and representation.

Cinema has the privilege of blending the possibilities of all the arts within its own disciplines into movies that are their own products. In short, the “seventh art” is a synthesis of the other six. For this reason, films can be considered as sources where all this synthesis can be observed. In this study, in the context of the interaction of art, cinema, and space, readings on films have been conducted, the development and differentiation of cinema in itself have been observed, and the mutual relationship it establishes with art and space has been questioned.

### **3. Art-Inspired Spaces in Movies**

In addition to the art branches such as painting, music, sculpture, which have existed for centuries and both influenced each other, cinema has been added as the “seventh art” in the relatively recent past. Nevertheless, it is not wrong to say that “cinema” is the most beneficial area of the achievements of the environment in which art allows for mutual influence and nourishment.

“Architecture” is perhaps the most prominent branch of art, which is influenced and affected by movies because it is a reproduction area of life practices. So for this interaction, Neumann (1999) says, “The fiction and multiple spaces that cinema has provided together with technology will be the re-existence of architecture.” Penz and Thomas (1997) explain the relationship between cinema and architecture, suggesting that architecture carries two-dimensional ideas into a third dimension while movies carry three-dimensional reality into two dimensions. The perception of the two dimensions mentioned

here as three dimensions implies that the two-dimensional image on the movie curtain is transformed into a three-dimensional space experienced by the viewer.

René Magritte's "Architecture au Clair de Lune" is an artistic expression in which reality is questioned through architectural space and images. In this context, *The Truman Show* is inspired by the work in terms of both content and representation. Furthermore, looking at the image of Summer Residence designed by Kapsimalis Architects gives a similar impression (Figure 2). Located in Santorini, this building is a part of the urban setup consisting of similar structures.



Figure 2. Summer Residence (Summer Residence, 2023), Architecture au Clair de Lune (Architecture au Clair de Lune, 2023), *The Truman Show* (Weir, 1998.).

The movie may have been inspired by the artwork, and the artwork by the urban setting of Santorini. The reason for this impression is due to the mutual relationship between architecture, art, and cinema, whether created consciously or unconsciously by the space designer. In this regard, in parallel with the description of Penz and Thomas, the movie provides the viewer with a 2-dimensional experience and the architectural structure a 3-dimensional experience with the inspiration from the work. Briefly, the use of similar images through different representations can offer different experiences to the viewer.

The fact that cinema deals with human life in all its dimensions, is based on visibility, conveys sections from life, and has a narrative structure shaped by people makes this art dependent on space (Şahin, 2013, p. 31). Adiloğlu (2005) argues that in order to explain the plot in a movie, we need the "space" that we have required ever since the dawn of humankind and that we come across at the intersection of cinema and architecture. Higson (2016), like Adiloğlu, also states that expression is made sense by space. In short, narrative needs space.

Space can be used to make people perceive different realities by connecting various disciplines. This situation can be illustrated by space fiction in the movie *Arrival* (2016), in which the artist James Turrell's works on human perception with intense light in an empty space by erasing the sense of limit are the source of inspiration. The space fiction created in the film plays with the perception of the viewer with light and perspective games in parallel with the works of the artist (Figure 3). In both works, the presentation and questioning of the perception of reality enable a semantic inspiration to be mentioned through space, far beyond a physical inspiration.



Figure 3. James Turrell, *Dhatu*, 2009 (Holzherr, 2012), *Arrival* (Villeneuve, 2016).

Different realities created through movies can be reproduced through space. The spatial variations created through representation provide an experience space for the audience, and the viewer finds himself in the narrative space, mentally if not physically. The viewer has a spatial experience. There is no need for the physical boundaries of the space to have this experience. Even if there are no boundaries, the space is rebuilt in the mind. In *Dogville* (Figure 4), for example, the space that the viewer sees cleansed from its boundaries is not empty. It is rendered as a space that still has boundaries for actors. Architectural representations are full of meanings hidden behind them, waiting to be noticed. It can be said that these representations cause the viewer to experience the space like the actors.



Figure 4. *Dogville* (von Trier, 2003).

The space perception created in the movies is very similar to the perception of the space experienced in the real world. By creating spaces that do not exist or will never exist, cinema can provide new space experiences that the audience can never truly experience, through its technical possibilities. For example, the Tower of Babel<sup>1</sup>, which is rumored to be located in the Hanging Gardens of Babylon, one of the seven wonders of the world, and depicted in various texts such as holy books, myths and historical writings, was painted by Pieter Bruegel the Elder in 1563 (Figure 5). The inexhaustible richness and imaginativeness in the depiction of the tower is Bruegel's painting, which is said to be unique among his works in terms of the abundance of signifiers and signified (Çimen, 2007). Then, in 1927, Fritz Lang interpreted another Tower of Babel in the cinema and transformed it into a space that the audience could experience mentally.



Figure 5. Tower of Babel (Tower of Babel, 2023), Metropolis (Lang, 1927).

The places we encounter in the movies and in real life don't just give us a physical experience. Just as the spaces we live in shape our daily lives and inform us about our economic and cultural situation, the spaces created in the cinema give us information about the movie and its characters. Through space representations (Figure 6) created about the past, the present or the future, we have a lot of information about the time the movie passes, economic and cultural conditions,

1 "According to Jean Bottero, in the archaeological study of the city of Babylon; Except for a small foundation remnant of a multi-storied ziggurat with a square foundation of 90 meters on one side and an estimated height of 90 meters, no other evidence was found. The myth in the Torah about the tower speaks of "building a city and a tower rising up to the sky so that the people would not scatter, in which adobe was used instead of stone, and tar instead of mortar". In the history of Herodotus; Talking about the period of Persian domination, he explains that the tower was eight stories high, thinning upwards, that it was a temple at the top where no one could enter but the chosen nuns, and that the city of Babylon was formed of three-four-storey houses surrounded by strong walls. It is known that the tower of Babel was destroyed and rebuilt many times by the invasions of the tribes, starting from the Sumerians five thousand years ago until two thousand five hundred years ago." (Çimen, 2007).



social structure, and so on. For example, *Troy* and *Great Gatsby* references to the past, *Lake House* to the present, and the *5th Element* to the future.



Figure 6. *Troy* (Petersen, 2004), *Great Gatsby* (Luhrmann, 2013), *Lake House* (Agresti, 2006), *5th Element* (Besson, 1997).

Defining space as “living space” (Pallasmaa, 2006) in the context of the intersection of cinema and architecture, Pallasmaa describes the relationship between cinema and architecture as follows:

“In its inherent abstractness, music has traditionally been regarded as the art form which is closest to architecture... Cinema is, however, even closer to architecture than music, not solely because of its temporal and spatial structure, but fundamentally because both architecture and cinema articulate experientially lived space and mediate comprehensive images of life. In the same way that material buildings and cities project and preserve images of culture and a particular way of life, cinema illuminates the cultural archeology of both the time of its making and the era that it depicts. Both forms of art define qualities and essences of existential space; they create experiential settings and frames for situations of life.” (p. 157)

The fact that space is much more than a physical element is due to its potential to have very different meanings depending on the purpose of use. For example, Pallasmaa explains the importance of the use of space in the movies and the effect of the space used on the audience as follows:

“Lived space is not uniform, neutral and valueless space. One and the same event - a kiss or a murder, for instance, - is an entirely different story depending on whether it takes place in a bedroom, bathroom, library, elevator, or gazebo.

An event obtains its particular meaning through the time of the day, illumination, weather and soundscape. In addition, every place has its history and symbolic connotations which merge into the incident. Presentation of a cinematic event is, thus, totally inseparable from the architecture of space, place and time, and a film director is bound to create architectural imagery and experiences, although often unknowingly. It is exactly this innocence and independence from the professional discipline of architecture that makes the architecture of cinema so innocent, subtle and revealing.” (Pallasmaa, 2012, p. 161-162).

This means that cinema spaces are not monotonous spaces with physical boundaries; they are much more complex structures.

Perhaps the reason why, famous for his paradoxes of mathematical patterns and symmetrical compositions, M. C. Escher’s work *Relativity* (Figure 7) inspired many movies, because of the illusions created in the minds of the audience by the works she painted using optical illusions. Escher explains this situation as follows: “That staircase is a rather sad, pessimistic subject, as well as being very profound and absurd. (...) Yes, yes, we climb up and up, we imagine we are ascending; every step is about 10 inches high, terribly tiring – and where does it all get us? Nowhere.” (Poole, 2015).

Stairs, which allow passage between spaces and are also an architectural element, are frequently used both symbolically and iconically to provide semantic integrity in the movie space. Through the stairs, a fall, an ascension, an encounter, a compromise, and much more can be used by processing to the stage with the side that allows us to experience the complexity of our perception of reality. Parallel to its symbolism, Escher’s *Penrose Stairs*, which has no beginning and no end, has inspired many movies. An example of this is *Harry Potter’s ladder* (Figure 7), which rotates exactly 90 degrees from one position to another and connects different spaces each time. These impossible stairs, each angle of which depends on the position of the person in space, were also represented in 3 dimensional in movie spaces such as *Inception*, *Dr. Strange*, and *Squid Game* (Figure 7).

As Pallasmaa (2012) points out, movies spaces, besides being related to architecture, provide an opportunity for the audience to explore the limits of their mind, regardless of the architectural discipline. Even if this situation is against all the laws of physics, it is always open to the experience of the audience, which refers to the dilemmas of the human mind through the space fiction in the movies. While this experience in the movies will push the limits of the human mind, stairs in the real world will always be tied to the limits of the human body!





Figure 7. Relativity (Escher, 2023), Harry Potter and the Chamber of Secrets (Cuarón, 2004), Dr.Strange (Derrickson, 2016), Inception (Nolan, 2010), Squid Game (Dong-hyuk, 2021).

The social events and scientific developments of the nineteenth century caused radical changes in the phenomenon of art, and the artists of the time were interrelated with these arts and scientific disciplines. Many fields, from the art of music to the art of literature, from all disciplines of the plastic arts to the performing arts, seek interdisciplinary answers by expanding the production areas of art and removing borders, together with other disciplines (Akengin, 2012). While the understanding of art of the age interacted with all disciplines outside the field of art, all art disciplines were intertwined with each other, benefited from scientific knowledge and developing technology, and the strict boundaries between art disciplines began to disappear (Akengin, 2012).

Architecture creates different areas of representation by collaborating with disciplines such as art and cinema beyond its own borders to produce future fictions by using technological and scientific developments. A discipline's being influenced by other art disciplines begins with Picasso's use of the collage technique (Lynton 2004, pp. 64-65). This situation provides opportunities for other art disciplines to diversify their creation possibilities. For example (Figure 8), it is seen that the art of photography, inspired by Cubism, has opened an experimental field of expression for itself.

This situation has also affected the art of cinema in order to create future predictions, and it has emerged as an expression field with unlimited possibilities in the context of space (Figures 8).

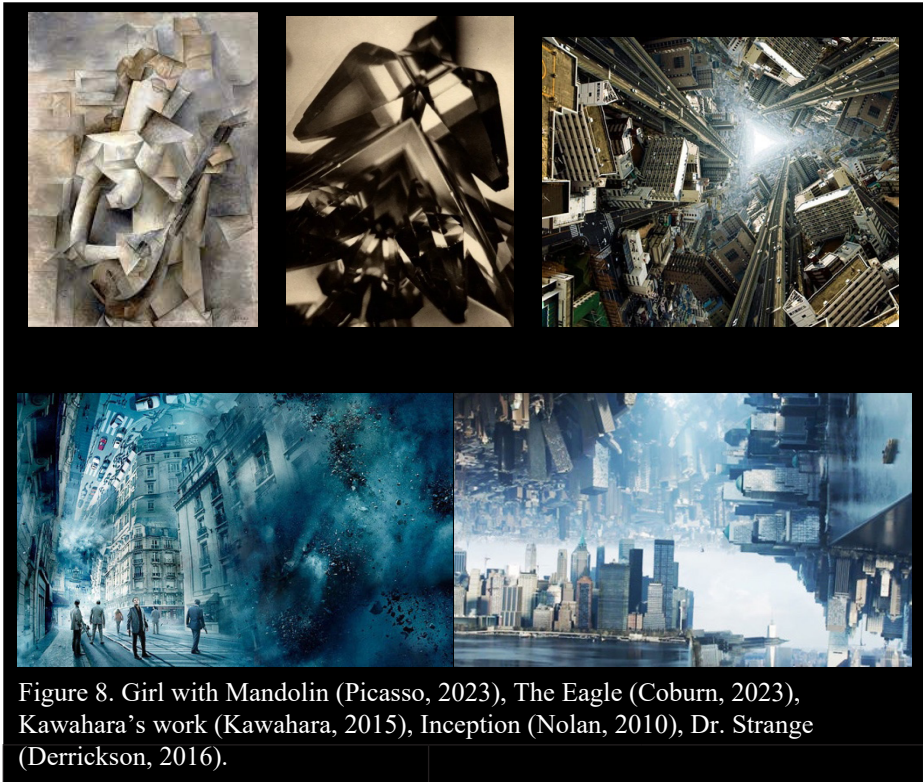


Figure 8. Girl with Mandolin (Picasso, 2023), The Eagle (Coburn, 2023), Kawahara's work (Kawahara, 2015), Inception (Nolan, 2010), Dr. Strange (Derrickson, 2016).

As in real life, the use of space in cinema also varies. For example, the “space” used in the cinema sometimes only forms the backdrop for the narrative, and sometimes it becomes a part of the narrative. In the space created by Alan Kaprow with the “Words” installation in Figure 9, people are constantly changing places and are invited to write words on the papers on the walls. Collage has the desire to turn itself inside out (O’dohererty & Antmen, 2010). The magic written on the glass walls of the house in the movie 13 Ghost, and the codes flowing within the simulation space in Matrix are represented in a context similar to Alan Kaprow’s installation, but through different realities (Figure 9). No matter how the space is used, it connects the viewer to the flow of the film in the context of “experience”.



Figure 9. Words (Kaprow, 2023), Thirteen Ghosts (Beck, 2001), Matrix (Wachowski & Wachowski, 1999), Archive Dreaming (Vimeo, 2023).

The meanings attributed to the images and forms in a visual work of art created in any style, the subject of the work, and the cultural codes it contains can directly or indirectly inspire the expressions of another discipline (Figure 9). So art can also be inspired by cinema. With Refik Anadol's installation called "Archive Dream", which he created by bringing together all the data in a library, the audience experiences the space interactively. While the work can be examined from various angles in a space where the viewer is surrounded, it reveals unexpected relationships between documents by "dreaming" when not interfered with (Gökçe, 2017).

Although the artist sees his installation as a proposition from the future and thinks that the project is not a science fiction story, "Archive Dream" feels like in the space created with the codes in the movie Matrix.

## 5. Conclusion

"Space" appears as a concept that has been pondered over for centuries, attributed various meanings and tried to make inferences. Therefore, space has both a physical and a semantic representational dimension. This representation,

supported by different forms of art, is used in movies as well as in real places. Therefore, the space designed in movies turns into a field of experience for the audience, that is, a mental production.

The results of the study are summarized below.

- In the context of space, it can be said that a relationship between cinema and architecture where two-dimensional ideas are moved to the third dimension and three-dimensional reality is transferred to the two dimensions.

Because of its connections with various disciplines, spaces can perceive various realities,

- Thanks to space, semantic inspiration can be mentioned far beyond physical inspiration in the presentation and questioning of the perception of reality.

- The spatial variations created through representation in the movies can enable the audience to find themselves in the narrative space mentally, if not physically, and to have a spatial experience.

- Movies can create spaces that do not exist or will never exist, through their technical possibilities and can provide space experiences that the audience can never truly experience.

- Beyond just having a physical experience through representations of space in the cinema, the time the movie takes place, the economic and cultural conditions, the social structure, etc., a lot of information can be obtained.

- Concepts such as virtual reality, artificial intelligence, internet art, and the metaverse can offer creative insights to create future predictions using the presence of art within space.

- Cinema was influenced by other branches of art, and at the same time inspired other fields of art with its own expression possibilities.

As you can see, “space” is produced by being influenced by many different branches of art. The art of cinema is the most influential of all these arts. Thanks to its unique techniques and possibilities, it provides an unlimited space experience. Thanks to this opportunity, it is inevitable that we are faced with new and different

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## CHAPTER IV

# FUTURISTIC APPROACHES IN DESIGN AT THE INTERSECTION OF TECHNOLOGY AND SPACE

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### 1. INTRODUCTION

The cultural and spatial transformation after the Industrial Revolution has deeply affected social life. Today, both experienced and foreseen technological developments, are likely to affect social life and cultural life and thus spaces in the future with the results they will bring. This study is a research on the effect of technology on space design and the futurist approach in interior design education.

The rapid development of technology has changed the lifestyle, business models, social structure and economy of modern society. Especially in recent years, the rapid spread of digital technologies has further increased the interaction between technology and space. As a result of this interaction, spaces have become more functional, smarter and more efficient. Technological developments have brought changes in various aspects of human life, including interior architecture. Developments have led to innovative ideas that have changed the way spaces are designed. The incorporation of technology into interior architecture has led to the development of smart homes, automation and energy-efficient buildings.



The interaction between technology and space is one of the modern world's most important and rapidly changing dynamics. Humans have always interacted with the possibilities offered by technology. This interaction has increased even more today, further strengthening the connection between technology and space. In this context, it can be said that futurist approaches play an important role in the field of design. The main purpose of these approaches is to anticipate new problems that may arise in the future and the technologies that may develop accordingly and to reshape existing design approaches accordingly. This way, designs can be made more original, functional, and sustainable. The rapid advancement of technology has enabled designers to adopt innovative and futuristic approaches in the field of interior architecture. These new approaches, which will replace traditional interior design, further increase the interaction between space and people by utilizing the opportunities offered by technology. The main aim of interior architecture education is not only to teach the basic principles of space design but also aimed students use opportunities offered by technology in the process of innovative design. Especially in recent years, the importance of technology in interior architecture education has increased even more.

In this study, firstly, the effects of technological developments on interior design will be examined and then, at the intersection of technology and interior design, the future predictions of Hacettepe University Department of Interior Architecture and Environmental Design students in the context of innovative futurist approaches in design within the scope of Technology and Space course and their reflections on space designs will be examined.

## **2. THE RELATIONSHIP BETWEEN TECHNOLOGY AND SPACE DESIGN**

Technology is derived from the Ancient Greek words “techne” (meaning art and craft) and “logos” (meaning to know). Technology can be defined as a phenomenon that is the biggest quality shaper of today, constantly researching and developing new techniques. In addition to this definition, technology inevitably interacts with both social life and nature as a phenomenon that affects every aspect of life. A certain level of knowledge and equipment is required for the production of tools and equipment produced to meet the needs of people. In this context, technology is a science that includes production methods, materials, tools, equipment and instruments used in industry. The phenomenon of technology, which can be characterized as a human activity, existed and was

used before science and engineering in our history. In addition, technology represents the practical aspect of science. Technology can also be characterized as an effective tool that paves the way for new inventions, where information exchange is used at a very active level in our age (Özturan, 2010;126).

Technology which is used in many different fields such as the design, production or utilization of products, systems, and processes using scientific and practical knowledge also meets people's needs and makes their lives easier. The rapid development of technology has caused great changes in many areas of our lives and these changes are reflected in space design.

As the speed of changes in the world increases, it is a current necessity for designers to keep up with the pace of change and direct their space designs in parallel with technological developments. In this context, researchers argue that space design should have a "future vision" (Jonas, 2010:64), (Seymour, 2008:52), (Evans & Sommerville, 2007:1), (Bevolo & Brand, 2003:33) to update itself as a discipline that shapes the future, to identify changing social needs, to anticipate change before society, and to design positive futures for society (Cross, Elliott & Roy, 1975). Design researchers Evans and Sommerville (2005:1), and Ratner (2007:5) argue that designers should receive a vision of the future in undergraduate education and that this vision can be incorporated into the curriculum.

According to Otto Wagner, new construction methods, new materials and new needs necessitate the renewal of forms. As can be understood from this, technological developments are among the factors affecting the shaping of buildings and interiors. This situation has always developed in this way in the historical process. Buildings and spaces cannot be abstracted from technology as they cannot be abstracted from function (Hasol, 2004).

Various materials, tools and equipment have been used in structure and detail analysis from the first spaces produced in the historical process until today. Stone, wood, various tree branches, baked or uncooked earth, glass, steel, iron, reinforced concrete, plastics, aluminium, etc. All materials and technologies used have left their mark on the ages in which they were found. Masonry walls were developed with stone, arches, vaults and domes with brick. Window sizes have increased with glass, multi-storey skeletonized structures have been developed with reinforced concrete, and wide openings have become easier to pass through, causing changes in the dimensions and appearance of buildings. With steel and elevator technology and curtain walls, skyscrapers began to emerge, changing the appearance of many cities with rising buildings. In the twentieth century,

structures were produced by applying different construction systems with spatial structures, shells, inflation systems, and suspended tensioning systems (Akyazıcı, 2019:32). However, the main purpose of these developments has been to find solutions to new problems brought about by new lifestyles.

While making a new design, the processing of the invention we create in our minds in industry or the workshop is a phenomenon that interacts completely with technology. The perceptual characteristics of a product must be produced by the desired characteristics as a result of the data collected. It is considered impossible to reach technology without going through the design stage. Technology should not be the purpose of design, it should be used as a tool (Foster, 2015;13- 14). Considering that the designer is generally a problem solver, technology should always be used as a tool in problem-solving. In this context, while providing space design education, it is an important part of education to give students a vision of how technology can be used as a tool. While giving this education, first of all, it is necessary to explain to the students under which headings technological developments affect space design.

Technological developments affect space design in various ways. These can be categorized under headings such as functionality, flexibility, aesthetics, energy efficiency, communication and security.

**1. Functionality:** Technological developments have a great impact on the functional characteristics of spaces. For example, technological solutions such as smart home systems can increase the functionality of spaces and make living spaces more comfortable.

**2. Flexibility:** Technology can make spaces more flexible. For example, smart furniture and modular structures make it possible to use spaces for different purposes.

**3. Aesthetics:** Technological advances can also have an impact on the visual design of spaces. For example, LED lighting and other lighting technologies can drastically change the appearance of spaces and make aesthetic contributions.

**4. Energy Efficiency:** Technological advances can improve the energy efficiency of spaces. For example, technologies such as solar panels can reduce the energy consumption of spaces and increase sustainability.

**5. Communication:** Technological advances can also have an impact on the communication features of spaces. For example, smart home systems and video conferencing systems allow people to communicate more easily between spaces.

**6. Security:** Technological advances can improve the security of spaces. For example, security cameras, fire alarms, facial recognition systems, fingerprint reading and other security systems can increase the security level of spaces. In addition, spatial Technologies which are developed against risks such as future epidemics have the potential to be effective in health security.

Under these headings, there are various means by which technology can influence space design. Technological developments in certain fields change and transform spatial design every day. This change and transformation bring new solutions to new problems that arise in current life practices.

Today, we can classify the technological developments that affect space design as follows:

**1. CAD and BIM Software:** Technological developments have provided interior designers with new tools to design spaces. One of the most important developments in computer-aided design (CAD) and Building Information Modeling (BIM) software. CAD and BIM software has revolutionized the way interior designers design spaces by allowing them to create detailed and accurate 3D models of their designs. This has significantly improved the design process, as architects can now visualize their designs before they are built thanks to this software, allowing them to make any necessary changes before construction begins. CAD software and BIM enable architects to design highly functional and efficient spaces. They can now more easily design spaces that meet the specific needs of their clients, such as providing maximum storage space or creating a more efficient workflow for an office space. In addition, another impact of technological developments on space design is the increased flexibility of interior spaces. With new materials and techniques available, interior designers can design spaces that are more flexible and adaptable to changing needs. For example, movable walls and partitions can be used to create temporary spaces that can be easily reconfigured to suit different activities.

**2. Intelligent Building Systems:** Making buildings smart to understand and better serve people's needs has become a major trend in space design in recent years. Smart building systems automate and control many areas such as heating, lighting, ventilation and security systems, saving energy and increasing user comfort.

**3. Augmented Reality and Virtual Reality:** Augmented reality (AR) and virtual reality (VR) technologies have started to be used in space design. Especially designers can experience design ideas in real-time thanks to AR and

VR technologies. These technologies also allow clients to fully understand the designs and even test their functionality.

**4. 3D Printing Technology:** 3D printing technology is also being used in space design. Thanks to this technology, complex designs and structures that were previously unattainable can be produced in 3D. This increases the freedom of design and allows for more creative and aesthetically striking designs to be realized.

**5. Internet of Things (IoT):** The Internet of Things (IoT) is a network of interconnected devices that communicate with each other, providing designers with new opportunities to create smart, efficient spaces. By incorporating IoT devices into interior design, designers can create more energy-efficient, safe and comfortable spaces. For example, IoT devices can be used to control lighting, temperature and security systems, making it easier for customers to manage their spaces.

**6. Production of Innovative Materials:** Smart materials are materials that can change their properties in response to external stimuli such as temperature, light and pressure. For example, smart glass can change from opaque to transparent in response to changes in light, offering privacy and natural light control. Smart fabrics change colour or texture in response to changes in temperature or humidity, providing users with an added layer of comfort. Another area where technology is having a significant impact on material innovation is the development of sustainable materials. These materials are environmentally friendly, renewable and have a lower environmental impact compared to traditional materials.

**7. Energy-Efficient Buildings:** The incorporation of technology into interior design has led to the development of energy-efficient buildings. Energy-efficient buildings use less energy than conventional buildings, leading to a reduction in carbon emissions. The use of renewable energy sources such as solar energy and wind energy has led to the development of buildings that generate their energy, resulting in lower energy costs. One of the important effects of energy-efficient buildings is reduced energy consumption. Energy-efficient buildings use insulation, smart lighting systems and other technologies that reduce energy consumption. The use of natural light and ventilation systems in energy-efficient buildings has led to a reduction in the use of artificial lighting and air conditioning systems.

**8. Automation:** Automation is another technological development that has significant impacts on space design. Automation involves the use of robots

and other machines to perform tasks traditionally done by humans. The use of automation in the interior has led to the development of energy-efficient and cost-effective buildings. Automation aims to reduce carbon emissions by enabling the use of renewable energy sources such as solar and wind energy. One of the important impacts of automation in the interior is the reduction of construction costs. The use of automation has led to the development of prefabricated buildings that are assembled on-site, reducing construction time and cost. Automation has also led to the development of smart materials such as self-healing concrete that can automatically repair cracks.

These topics may diversify and increase as technology develops. However, we can elaborate on these topics.

### **3. FUTURISTIC APPROACHES IN DESIGN**

The word ‘Futuristic’, which takes its origin from the Latin words ‘future’, and ‘futura’, means progressive and modern, foreseeing beyond the present time. It is a term used in architecture and design as in many other disciplines. It is also used for the thoughts of philosophers who have thoughts beyond their age.

Futurism is a perspective towards the future. People want to predict what might happen in the future and act according to these predictions, and this also applies to interior design. Interior designers create their designs by thinking about what kind of lifestyle we will have in the future, what people will like and dislike, and what they may need. The importance of futurist approaches in interior design is to reflect these predictions and thoughts into the design. Designers who think about the lifestyle of the future can make designs that will make people’s lives more comfortable by using future technologies and materials in their designs.

While scientists continue to explore the vast expanse of space and develop new technologies, designers pursue innovative designs by pushing the limits of what is possible in terms of design. At the intersection of technology and space, futuristic approaches to design are paving the way for innovation and new possibilities. The integration of technology into interior design has a multifaceted impact on the way we live, work and interact with our environment. Today, there is a growing interest in futuristic approaches to interior design that combine technology and design to create functional and visually stunning spaces.

Interior design is a discipline that is influenced by many different parameters to improve the quality of life of people and provide functionality.

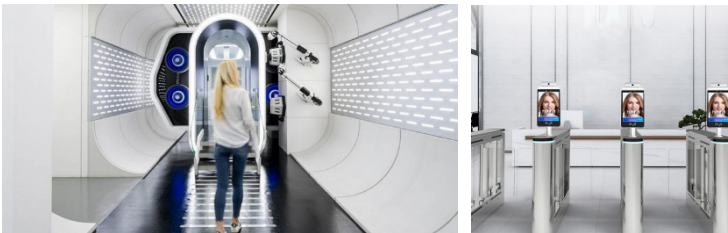
How life will be in the future and how the spaces will change accordingly is an issue that attracts the attention of Architects and Interior Designers. It can be said that futurist design is influenced by the increasing speed and complexity of technology with the development of technology. Adopting futurist approaches in interior design increases the aesthetic value as well as functionality. This approach allows designers to design freely with the innovations brought by technology. Futurist design can respond to the needs of the modern age and impress people with their imagination. Therefore, the use of futurist design in interior design is very important.

One of the first applications of futurist design is seen in the field of technical communication and entertainment. The use of futurist design is common in new-generation movie theatres, game rooms, entertainment centres and other technological areas. These designs are made using many different colours, shapes and materials along with advanced technological devices that include the innovations brought by technological advances.



**Figure 1:** Rhike Park Theater and Exhibition Hall, Tbilisi- Georgia(Source URL:1)

Futurist design is also used in workplace design. Especially in offices built for technology companies, the use of futuristic designs is quite common. These designs have functional and ergonomic features to increase employee productivity. These designs are also compatible with technological devices in the workplace.



**Figure 2:** Futurist Office Design Examples (Source URL:2)



Several innovations are envisaged for office interiors, especially in the next 20 years. We can list them as follows:

- Applications that eliminate cabling altogether,
- Using smart infrastructures that offer virtual multimedia alternatives and facilitate load data transfer,
- Strengthening digital equipment that increases productivity,
- Preference for environmentally friendly smart technologies,
- Transition to large and spacious, multi-user experience-oriented space structures,
- Strengthening green building infrastructures through digitalization,
- Development of ergonomic designs that are more compatible with the human body,
- Implementation of office equipment that can be produced on a micro-scale daily and will rapidly decompose in nature

The use of futurist design in residential design is also increasing. These designs are compatible with the furniture, lighting, decoration and other accessories as well as the technological devices used in houses.

The main aim of the schools that provide Interior Architecture education is to train designers equipped to respond to both current needs and future needs. In this context, the education given must follow current developments. In addition, it is necessary to give Interior Architecture students a vision of the future. We are living in a rapid change in the age of information and technology. Therefore, it is an important pillar of education for students to think about future spatial problems and their solutions. Because in this way, it is thought that students' design skills will also improve.

#### **4. STUDIO WORK**

Within the scope of the Technology and Space course opened for the 7th-semester students in Hacettepe University Department of Interior Architecture and Environmental Design, first of all, lectures on the relationship between technology and space were held in which students actively participated in their research. These lectures aim to increase the student's knowledge of the relationship between space and technology while enabling them to think and develop ideas on the potential of technological developments to affect space design. In addition to this, it is aimed to follow the current technological



developments and the innovative applications they have brought about in interior design. After this process, students were asked to create a scenario about how humanity will live 500 years from today and to design a living space in this scenario. During this idea project phase, students were not intervened in their predictions and were left free to produce positive or negative scenarios for the future.

#### ***4.1. PURPOSE OF THE STUDY***

This study aims to enable students to comprehend the impact and importance of technology in interior design both at the spatial level and at the furniture level;

- To learn about the effects of technology on space design,
- To learn about current technological developments and their spatial effects,
- To be able to develop ideas on the innovations that technology can make in space design in the future,
- Reflect on the ideas they have developed into a design,
- As Interior Architects, it aimed to develop solutions to spatial problems that may arise in the future.

#### ***4.2. PROCESS OF THE STUDY***

In the 14-week study process, in the first stage, students were given information on the relationship between technology and space, the historical process and innovative developments. In this context, the relationship between technology and space was analyzed under five headings within the scope of the course. These titles are as follows:

1. The use of technology in interior design
2. The effects of new technologies on interior design
3. Design of smart buildings and smart homes
4. Use of sustainable technologies in interiors
5. Design and fit of technological tools to the space

Under these headings, the relationship between spatial design and technology is examined. Under the first heading, it is discussed how technologies such as 3D printers and artificial intelligence applications can be used in interior design.

Under the second heading, it was discussed how the integration of technologies such as virtual reality and augmented reality into the interior space creates an impact and changes the space. Under the third heading, it was discussed how the design of smart buildings and homes can play a role in how space can be made functional and efficient. Under the fourth heading, we discussed how sustainable technologies such as energy saving and waste reduction can be used in the interior space and how to do less damage to the environment. Finally, under the fifth heading, research and discussions were made on how smart devices can be harmonized with other furniture and decoration elements and their contribution to the aesthetics of the space. (Table 1)

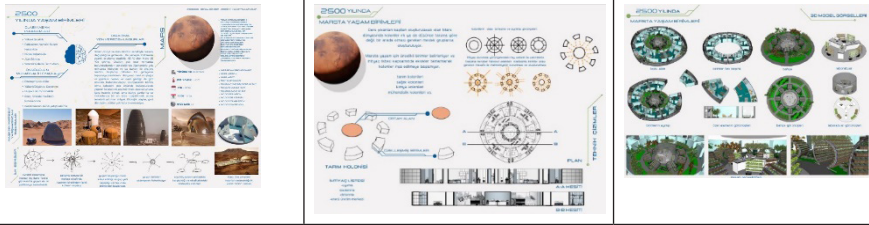
1. WEEK	2. WEEK	3. WEEK	4. WEEK	5. WEEK
A general introduction to the relationship between technology and space	The impact of software such as augmented reality, CAD, and IBM on space design	Modular Houses - Technology impact and innovations in surface and facade designs	The effects of 3D printing technologies on space design	Reflection of technology at the spatial and furniture level (Smart homes, digital furniture)
6. WEEK	7. WEEK	8. WEEK	9. WEEK	10. WEEK
Renewable energy sources and technological developments in material design and production and their spatial effects	MIDTERM EXAM	Giving the design topic and brainstorming on initial ideas	Identifying scenarios and sketching initial ideas for them	Sketches and design proposals
11. WEEK	12. WEEK	13. WEEK	14. WEEK	
Development of designs 1/50 drawings	Development of designs 1/20 drawings	Development of designs 1/20 drawings	FINAL EXAM	

**Table 1:** Weekly schedule followed during the semester

After working with students on how current technological developments affect the interior design and what innovations have been experienced, lectures were held on possible future technological developments and their



**PROJECT 2**



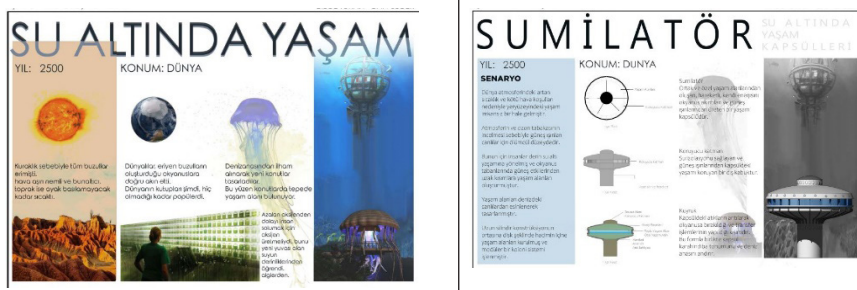
**Scenario:** Due to reasons such as high temperature, radiation-induced epidemics, increasing population density, and insufficient food resources, Earth has ceased to be suitable for life and Mars is inhabited as a colony. Colonies are categorized by division of labour. These colonies are divided into classes such as agricultural colonies, health colonies, chemical colonies, and engineering colonies. Nation states disappeared and a single world state was formed.

**PROJECT 3**



**Scenario:** Earth's atmosphere is no longer suitable for life. Humans live in small colonies in capsules in deep space as looting activities increase due to a lack of resources.

**PROJECT 4**



**Scenario:** Due to the increasing temperature in the Earth's atmosphere and deteriorating climatic conditions, life on land has become impossible. Due to the depletion of the ozone layer, the sun's rays have become deadly for living things. For this reason, people live on ocean floors, underwater. Living spaces are designed inspired by the creatures of the sea. Living spaces were built inside the disk-shaped volume in the middle of the long cylinder construction and a modular colony system was designed.

### PROJECT 5

**HAVIN**  
 Birleşik Milletler Birliği tarafından düzenlenen '2009' yarışmasında en iyi konsept çalışması olarak kabul edilmiştir. Yarışmada katılımcıların en büyük hedefi, gelecekte yaşanacak iklim değişikliğiyle mücadele etmektir. Havin, gelecekte yaşanacak iklim değişikliğiyle mücadele etmektir. Havin, gelecekte yaşanacak iklim değişikliğiyle mücadele etmektir.

**GÖRÜLÜŞÜM**

**TİNK QIRAB**

**Scenario:** As the Earth’s temperature reaches its maximum, glaciers melt, and land masses diminish and sink into the water. For this reason, humanity tries to create living spaces above and below water and to protect its species. The borders of countries disappear and a one-world state is established. Capitalists an order has been established that is focused only on the living, without any concerns.

### PROJECT 6

**planet**

**planet**

**Scenario:** Due to population growth and climate change, Earth is no longer suitable for human life. Humans have settled on the planet Mars as a colony. People live in a communal single-state system where the concept of family has disappeared.

### PROJECT 7

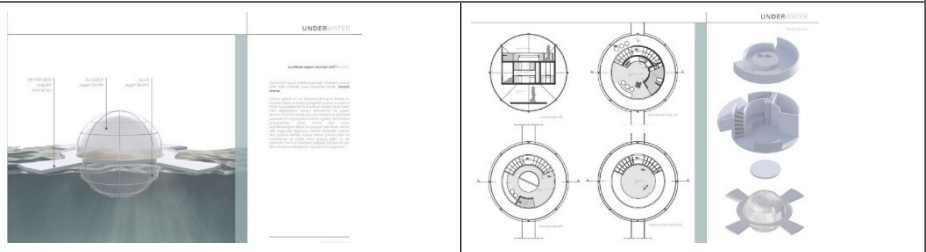
**MARSUP**

**MARSUP**

**MARSUP**

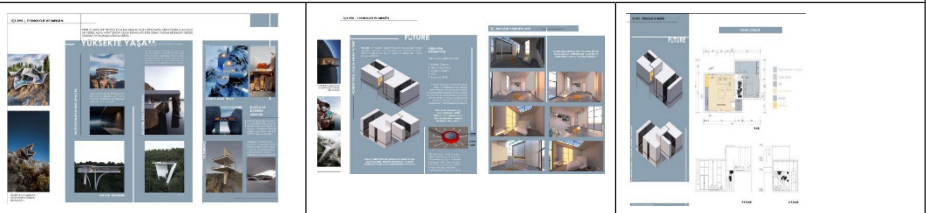
**Scenario:** Due to climate change and the level of pollution in the atmosphere, humans have settled on the planet Mars as colonies. In colonies that produce their food, living spaces are designed so that one person or two people can live. Units designed like a cell nucleus are designed so that 10 people can live. Food is also produced in each core unit.

**PROJECT 8**



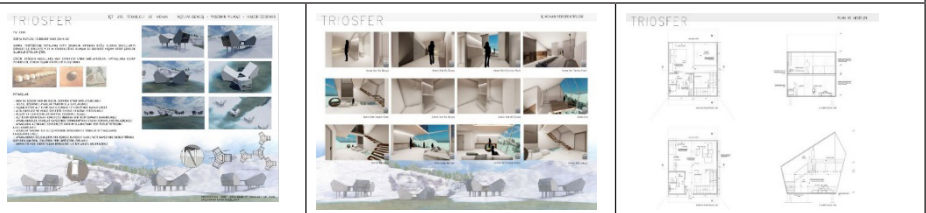
**Scenario:** The world is under water due to climate change and global warming. People live in floating, mobile living units, some of which are on the water's surface and some of which are underwater. These units are designed in such a way that they can be used individually or added to each other to live together.

**PROJECT 9**



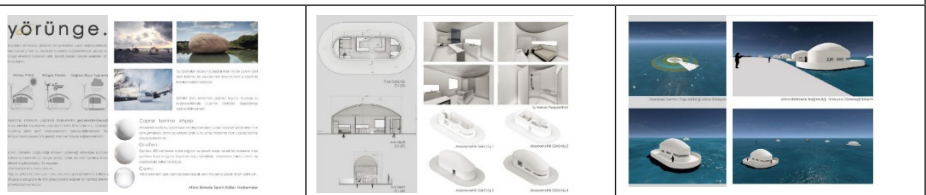
**Scenario:** In a world where the water level rises due to climate change, people live in very high-altitude areas.

**PROJECT 10**



**Scenario:** Due to climate change, the Earth is covered with ice and water. For this reason, humans live in a living unit that can be used both on ice and in water.

**PROJECT 11**

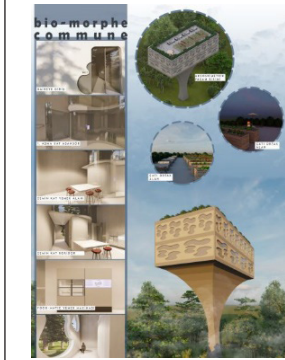


**Scenario:** Due to climate change and global warming, glaciers have melted and the Earth is flooded. People live in mobile units on water.



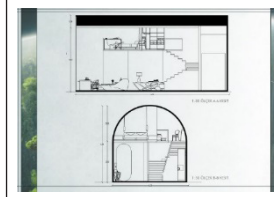


**PROJECT 15**



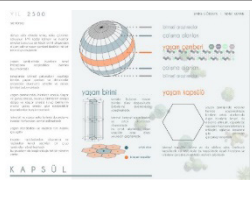
**Scenario:** The human population has decreased and the biomorphic building concept has prevailed. People live in buildings located quite high above the earth. Buildings are designed like trees with roots in the ground and branches reaching the sky.

**PROJECT 16**



**Scenario:** The human population has decreased and green areas and forests have increased again in the world. With the effect of the decreasing population, multi-storey buildings are no longer built.

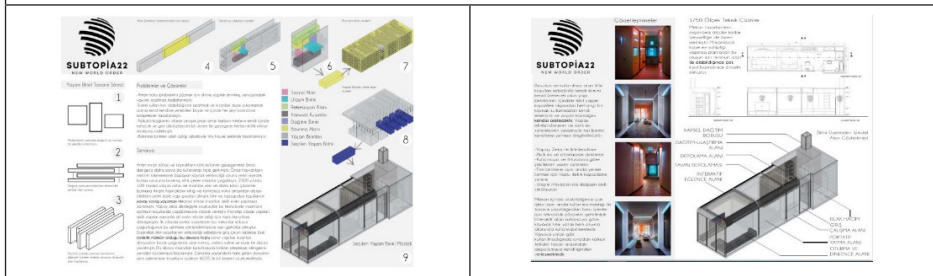
**PROJECT 17**



**Scenario:** The Earth has been flooded and the human population has been greatly reduced. An artificial land called the circle of life has been created along the equatorial belt and people live in colonies in these areas.



**PROJECT 18**



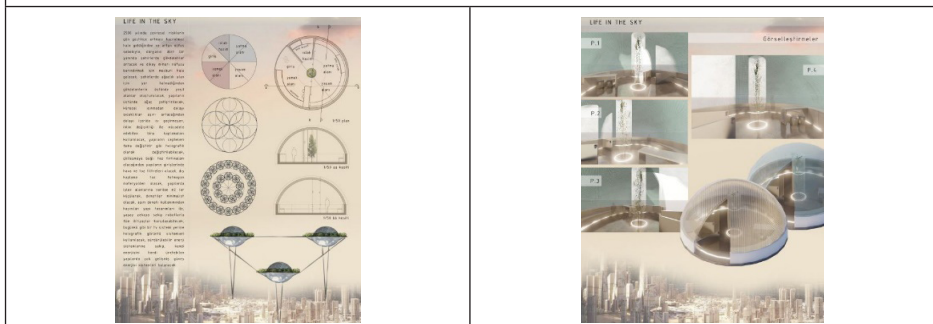
**Scenario:** Climate conditions in the world have changed completely due to global warming. For this reason, closed cities that are close to the outside and produce their energy have been established. The dwindling population of the Earth lives in colonies in these closed cities.

**PROJECT 19**



**Scenario:** A large part of humanity has been wiped out as a result of the growing hole in the ozone layer and various natural disasters. Since direct exposure to the sun's rays is dangerous, people have started to live underground.

**PROJECT 20**



**Scenario:** The growing world population has increased the density of cities. Desertification has increased due to the climate crisis. At very high altitudes, people have created new cities.

**Table 2:** Idea projects designed within the scope of the course

In most of these scenarios, living spaces have become smaller and more individualized than today, and personal differences are less reflected in space design. It has been observed that the designed living spaces have become much more minimal compared to the present day and that living spaces and workspaces are intertwined.

SCENARIOS FOR LIFE IN 2500							
Project Number	Under Water	On Land	Underground	Both on Land and on Water	Very High Altitudes	In Earth Orbit	On Mars
P1						✓	
P2							✓
P3						✓	
P4	✓						
P5				✓			
P6							✓
P7							✓
P8	✓						
P9					✓		
P10				✓			
P11				✓			
P12		✓					
P13					✓		
P14		✓					
P15					✓		
P16		✓					
P17		✓					
P18		✓					
P19			✓				
P20					✓		

**Table 3:** Life scenarios in designed idea projects

The technologies used by the students in their living space designs were analyzed under 6 headings. These titles are; use of smart systems, use of augmented reality and virtual reality, use of 3D printing technology, use of innovative (biosynthetic) materials, modular space design and energy-efficient building design. As can be understood from Table 4, students mostly used smart

systems and energy-efficient design in their designs. In 10 of the 20 studies, mobile-modular space design was used. In addition, augmented reality, 3D printing technology and innovative material technology were used with equal intensity.

TECHNOLOGIES USED IN LIVING SPACE DESIGN						
Project Number	Smart Systems	Augmented Reality and Virtual Reality	3D Printing Technology	Bio-Synthetic (Innovative) Material Usage	Modular or Mobile Space Design	Energy-Efficient Building Design
P 1	✓	✓			✓	✓
P 2	✓			✓	✓	✓
P 3	✓		✓	✓	✓	✓
P 4			✓	✓	✓	✓
P 5	✓	✓			✓	✓
P 6			✓			✓
P 7	✓		✓			✓
P 8		✓	✓		✓	✓
P 9	✓				✓	
P 10	✓	✓			✓	✓
P 11	✓		✓	✓	✓	✓
P 12	✓		✓	✓		✓
P 13	✓	✓	✓			✓
P 14	✓			✓		✓
P 15	✓	✓	✓	✓		✓
P 16	✓			✓		✓
P 17	✓		✓		✓	✓
P 18	✓	✓				✓
P 19	✓	✓				✓
PR 20	✓	✓		✓		✓

**Table 4:** Technologies used by students in their living space idea projects

Although the students had many negative scenarios about the future, it was seen that they were able to develop ideas that could solve these problems with technological developments. Although they could not fully explain the technical solutions of the ideas they developed, their ability to produce innovative ideas for the future was seen as an application that could improve their design skills.

## 6. CONCLUSIONS AND RECOMMENDATIONS

Technological advances in interior design have led to innovative ideas that have changed the way spaces are designed. The combination of smart technology, automation and energy-efficient systems has led to the development of energy-efficient and cost-effective buildings. The impact of technological advances in the discipline of Interior Architecture is evident in the development of smart homes, automation and energy-efficient buildings. The future of Interior Architecture depends on technological developments that will continue to shape the way spaces are designed. In this context, the technological factors that may play a role in shaping the spaces of the future can be listed as follows; smart homes, renewable energy sources, augmented reality, bio-synthetic materials, modular homes, 3D printer technology, health-oriented design, and security-oriented design. These factors may change as time passes, and our living conditions and technological possibilities change.

Within the scope of the Technology and Space course carried out with students of Hacettepe University Department of Interior Architecture and Environmental Design, it was observed that students' interest and curiosity in the subject increased at the end of the semester. Especially the current issues such as increasing population, global warming and climate problems caused the students' future scenarios to be generally negative. It was observed that most of the students had predictions about communal life both socially and spatially in the future. In the classroom environment where future scenarios and spatial changes were discussed in the form of brainstorming, it was observed that students envisioned major changes both socially and spatially and that they could think of these changes in parallel with technological developments.

In general, the student works, which contain predictions such as loss of scale, the transformation of surfaces into electronic screens, the existence of artificial and void-like atmospheres, and the volumetric compression and mobilization of living spaces, have been an important study in terms of thinking and generating ideas about the future. Because the personal smart devices we are currently using will be combined with artificial intelligence technology in the future and this integration will start to adapt to space designs and buildings with holistic smart systems on a larger scale. In this way, new expectations of younger generations and different user-oriented spatial experiences will enter our lives. Therefore, designer candidates need to have this vision in Interior Architecture education both in terms of the future of the profession and the

quality of the spaces to be produced in the future. In this context, the curricula in Interior Architecture education must be constantly updated in parallel with the possible developments that we may encounter in the future.

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## CHAPTER V

# HEARTY PALACES OF PERCEPTION: THE SENSE OF SPACE IN IMMIGRANT HOUSES IN NICOSIA

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### 1. INTRODUCTION

House is perhaps one of the most special subjects of the field of interior architecture, which designs for every moment of human life. The concept of home may be varying from culture to culture, but is conceived of a common feeling as being a safe and private place; from which social life stems. The concept of home may be assigned different meanings over the course of life, depending on structural, group or individual related circumstances. Duyvendak, who deals with home, being at home, and belonging concepts, clarifies the definition of home by referring to the ‘feeling at home’ that is when people feel safe, secure, comfortable, and whole with their surroundings (Duyvendak, 2011, pp. 26-27).

In international human rights law and its interpretations, it has been clearly determined that the house is not just a physical structure consisting of a roof and four walls; instead, house is a much broader concept that includes the various material and moral convenience elements necessary for the creation of a safe and protected living space. Moreover, affordable housing is not just a desirable goal, but a fundamental human right that all people own. This was adopted in 1948 by the Universal Declaration of Human Rights<sup>1</sup>, which recognized the right to affordable housing as an integral part of the right to a decent standard of living.

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<sup>1</sup> Accessible from <https://www.un.org/en/about-us/universal-declaration-of-human-rights>

When speaking of people's reactions to their environment, it should be known that they are related, at first hand, to the physical environmental characteristics. It can be understood by the complex relationships that these associations are formed by such features. In a perceptual sense, the experience of this complexity is subjective, but as Rapoport states it is clear that environments have certain characteristics that produce the experience of complexity much more reliably and clearly than others; and these properties can actually be specified and designed (Rapoport, 1977: ch. 4).

The issue of immigration in Cyprus is a bit different situation than is with the general understanding of the subject; and thus, the concept of home of the immigrant should be taken into account in a relevant way. The transnational positioning of the displaced person has turned into being a refugee in their own homeland. Explaining the concept of home is a complex issue that needs to be addressed in the relationship spiral of meanings, feelings and sensations, as stated by Blunt and Dowling (2006). As such, the resettlement issue of immigrants in Cyprus becomes even more complex. The burden of feeling a foreigner in their own homeland has perhaps created the most difficult feeling for these people to try setting up a new home. How this has been achieved by the help of a dedicated efforts put into a successful resettlement project, together with how these immigrants perceived their homes is issued at this chapter.

## 2. IMMIGRANT'S HOME: CONCEPTS AND AFFILIATIONS

Immigration has been a multi-faceted phenomena of humankind throughout all ages. People around the world, with varying reasons, have felt and still feel the consequent emotions of it, deeply. Various socio-political factors such as wars, violence, economic hardship, unemployment, difficult or unbearable environmental conditions, or the search for a better life force, encourage or stimulate people to migrate and thus displace. All people have an idea, detailed or shallow, about the conditions under which the displaced people migrated, what they encountered in their arrival, whether they mingled with the local and foreign people, what they hoped for, what they found, and why they endured all these difficulties. Thus, displacement or migration of people is a phenomenon, being a concrete, perceptible and testable event and object, emphasizing the objective reality of the event, or process <sup>2</sup>.

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<sup>2</sup> 'Phenomenon' is used as the term conveying the meaning of perception of an object acquired by any sense, that is, everything perceived through the senses. Whatever is sensed is the reality of the outside world. Philosopher Immanuel Kant used the phenomenon for things that can be



The issue of re-establishing a home for the displaced people, who, being so, leaves not only the hometown but the home as same as the self as well, is an important issue to be considered at the intersection of various disciplines. Having to leave home is maybe the most tragic feeling, introducing a sense of fear, because until another place is set up to be the home, people feel insecure due to its complex set of requirements. Yet it is a situation come across, globally. The reasons may differ, but the feeling is almost the same. When Heidegger claims that “homelessness is coming to be the destiny of the world” (Heidegger, 1977 [1947], p. 219), he stresses this commonality. Sociology, politics, economy, psychology, art, architecture, interior architecture all considers the issue of immigrants/displacement of people from their specific perspectives. In literature, poetry, memory records of leaving home behind are often encountered accompanied by an emotional anchor. For example, Cavafy’s poem ‘The City’<sup>3</sup>, is a powerful expression of the house as a multi-layered phenomenon that can be seen as a home, neighborhood, village, city or country, and its accompanying emotions:

*You said: “I’ll go to another country, go to another shore,  
find another city better than this one.  
Whatever I try to do is fated to turn out wrong  
and my heart lies buried like something dead.  
How long can I let my mind moulder in this place?  
Wherever I turn, wherever I look,  
I see the black ruins of my life, here,  
where I’ve spent so many years, wasted them, destroyed them totally.”  
You won’t find a new country, won’t find another shore.  
This city will always pursue you.  
You’ll walk the same streets, grow old  
in the same neighborhoods, turn gray in these same houses.  
You’ll always end up in this city. Don’t hope for things elsewhere:  
there’s no ship for you, there’s no road.  
Now that you’ve wasted your life here, in this small corner,  
you’ve destroyed it everywhere in the world.*

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perceived by the senses. This definition is more about our perception of the external world, which may or may not have a reality of its own, through our senses and our understanding of it through our brain. Therefore, immigration is interpreted as a phenomenon.

Retrieved from <https://www.felsefe.gen.tr/fenomen-nedir-ne-demektir/>

3 Retrieved from <https://www.poetryfoundation.org/poems/51295/the-city-56d22eef2f768>

The home and the country are considered almost identical throughout expressions as such, and they provide clues as to why the home cannot be a home everywhere. Someone sometimes may not be at home even when in the hometown; or may not be able to stay in the hometown just because s/he is not at home. It can be interpreted that maybe there is no home or country if there is no memory connection. Country and home do not belong to the class of finite sets of explanations, where their boundaries can be denoted and contents be counted. They are much larger concepts, in which human emotions have the major roles. They are neither purely mental images nor merely physical objects, as stated by Sixsmith (1986). Both are experiences, integrated with their object and image, that cannot fit into shallow definitions. Every immigrant's experience is as common as a fingerprint, but can be as unique and matchless as a fingerprint.

In order to call the house a home, it is necessary but not sufficient to talk about its concrete structure components like wood, marble, metal, concrete, glass, iron, nylon, etc., and its formal characteristics like an apartment in the city, a detached house in the countryside, a nomadic tent in the highland, a makeshift refugee camp, etc. The psychological meaning of the house is much more complex than its material existence; and it is not fixed definition. As the structural and formal characteristics of material existence change, its psychological meaning can also change. As Blunt and Downing state, home is a multi-layered body of meanings that includes emotions, cultural transformations and transfers and the relations between them all (2006).

These multi-faceted meanings of home may not be clearly noticed when looking at a settled house. What makes the house a home is the measure it adheres to in exchange with the outside. This measure is clearly open to the inhabiting household and hidden to the others, as a veil. However, this veil is lifted from the displaced person's house, which is dispersed to be rebuilt. Perhaps revealing the elements that make home a home would not be possible without this movement. The migrant's home cannot be reassembled without the unfolding and spreading of complex layers of meanings. The immigrant has left h/er/is home behind at least once and has acquired another house at least once. The house, which was suspended between the immigrant's departure and arrival, becomes transparent once disintegrating and once re-establishing. The old measure is no longer useful, the new one has not yet been cut. Within this subject, Reicher, Hopkins and Harrison claim that leaving one's home remains in the memory of the immigrant, either implicitly or explicitly, for many years (2006). And Van Tilburg and Vingerhoets states that sometimes this remaining

feeling's trace seems to fade, sometimes it comes alive in the mind as it has never been worn (2005).

When viewed from the perspective of the immigrant, the changing relationship of the person with the house and thus the emergence of the resultant concept of plural house can be understood more thoroughly. Social positions and identities of people can change according to this displacement. Within this subject, Nail puts forward some suggestions like it is necessary to stop reducing the subjects of the movement to fixed identities as immigrants, or even confining them to certain fixed houses, and beyond that, singularizing the 'native' and sealing it in the position of the immutable 'host' (2015). The set up of the house is based on a never-ending comparison of the old with the new, because people set up their homes by oscillating between 'roots' and 'routes' as affiliated by Ahmed, Castañeda, Fortier and Sheller (2003). This setting up, which reflects from both cognitive and emotional planes at the same time, takes place sometimes only in an object, sometimes in the space itself, and sometimes at the intersection of them both.

### 3. BRIEF HISTORY OF IMMIGRANTS IN CYPRUS AND DEDICATED EFFORTS TO PROVIDE RESIDENCE

*“Just because of a reason, everyone can be a refugee, anywhere in this world. When we discuss about refugees, we think of refugees as if they are an abstract figure or statistics. They're not refugees. They are persons, individual persons. ... your friends who cook for you or who you play cards with or who writes poems for you could vanish just like that... and in times of crises, we forget about everything, we forget about our identities, we forget about our countries, we forget about where we came from. And we just help each other. That's what makes us human.”*

*Mehmet Ali Alabora<sup>4</sup>*

Intercommunal conflicts in Cyprus, of course, do not start with 1974, as is generally known. On December 21, 1963, the Republic of Cyprus was shaken from its foundations. By 1964, Turkish Cypriots were either expelled from 103 villages or had to migrate voluntarily to places they saw as safer, thus becoming

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<sup>4</sup> the film “Wales is a Land of Refuge” directed by artist Mehmet Ali Alabora, who is a refugee at the moment, was awarded the Grand Prix Charity Film of the Year Prize at the Charity Film Awards. In his speech at the award ceremony, the artist touched upon the refugee issue strikingly, just like Heidegger's prediction, and said that anyone can become a refugee for any reason. Retrieved from: <https://twitter.com/memetalialabora?lang=en>

refugees in their own country (Çavuşoğlu, 2011). Meanwhile, by 1974, the ‘Turkish Cypriots’ and the ‘Greek Cypriots’ had been living in separated zones divided by the Green Line (which was drawn in December 1963, at first, for the capital city Nicosia). It has become an unwittingly “iron curtain” dividing the two communities, not only physically but also mentally (Harbottle, 1970, p.68) as North and South in Cyprus (North for Turkish Cypriots-South for Greek Cypriots). The number of refugees, either forced out, or abandoned homes because of fears of one another or under population exchange agreement (to North and to South) is 129,000 Greek Cypriots<sup>5</sup>, and 65,000 Turkish Cypriots<sup>6</sup>.

Solving the resettlement problems of immigrants has been an issue undertaken with great importance and sensitivity since the beginning of the events. In the early days, immigrants settled in schools, mosques, warehouses, houses, barns and caves that were empty in the place where they migrated. Since the freedom of travel was not given to the Turkish Cypriots in the days of the migration, the immigrants had to make do with the facilities of the village they migrated to, and they could only benefit from the tents and blankets sent by the Red Crescent<sup>7</sup>.

Efforts to prepare better residence conditions for immigrants in the northern part of Cyprus with local opportunities were undertaken since the beginning of 1964. Previously, barrack-type rooms were built, empty warehouses were divided and allocated to families, and public toilets and showers were installed. Such activities continued until 1966 in the Ağırdağ camp, Hamitköy and Nicosia, where immigrants were in immense numbers. With such efforts, most of the immigrants got rid of having to live in tents, but it was not possible to provide anything further than a small, one-room house per family. Even large families could be allocated a small room to reside, and most of the immigrants had to live first in tents and then in a single room, which they used for all functions of living.

At the beginning of February 1966, the task of preparing a project that would deal with the entire immigration settlement problem was given to the Planning and Construction Department<sup>8</sup> (Photograph1). As a result of devoted and productive work, in a very short time, the implementation of the project

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5 Criton Tornaritis, (1975), the Attorney-General of the Greek Cypriot Administration, Legal Aspects of the Problem of Refugees in Cyprus

6 Evidence to the UN by Turkish Cypriot documents (1975) re Vienna III.

7 Cyprus Turkish Administration Public Works and Transportation Affairs Membership (1971), Kıbrıs'ta Göçmenlerin İskanı brochure, Nicosia, (p.8).

8 [https://www.youtube.com/watch?v=tkTmA\\_yuco](https://www.youtube.com/watch?v=tkTmA_yuco)

started with the groundbreaking ceremony of the first phase of Ortaköy Göçmenköy Immigrant Village on May 5, 1966<sup>9</sup>. The whole project was planned for and accomplished within 5 years, between 1966-71. As a result of the successful implementation of the Immigrants' Settlement Project in Cyprus, 12000 immigrants, which was one-tenth of the Turkish Cypriot population at the time, were freed from the very poor conditions of residence in tents, caves, shops and barracks, and were provided with healthy and habitable homes<sup>10</sup>.



**Photograph 1.** Planning and Construction Department staff responsible for the preparation, control and implementation of the Immigrant Settlement Project in Cyprus: from left to right Ayer Kaşif (Assistant Director), Oğuz Başak (Secretary General), Hakkı Atun (Director), Azer Nejdet (Construction Branch Head)

Cyprus Turkish Administration Public Works and Transportation Affairs Membership (1971), Kıbrıs'ta Göçmenlerin İskanı brochure, Nicosia, (p.5).

#### **4. CREATED OUT OF NOTHING: GÖÇMENKÖY IN HUMAN-TIME-SPACE AXIS**

Göçmenköy (Turkish for «village of the immigrant») is a quarter of Nicosia in North Cyprus. It was founded in 1966 as a settlement for the Turkish Cypriots displaced as a result of the intercommunal violence that took place. The formerly rural area became urbanized, mainly by the social housing units built from mid-1960s to early 70s. Before the Cyprus crisis of 1963–64, the quarter was an agricultural area, with only a detergent factory

<sup>9</sup> Cyprus Turkish Administration Public Works and Transportation Affairs Membership (1971), Kıbrıs'ta Göçmenlerin İskanı brochure, Nicosia, (p.9).

<sup>10</sup> Cyprus Turkish Administration Public Works and Transportation Affairs Membership (1971), Kıbrıs'ta Göçmenlerin İskanı brochure, Nicosia, (p.11).

‘Harson’ and a Turkish garrison. In 1966, the displaced Turkish Cypriots from areas of Nicosia experiencing conflict such as Omorfita/Küçük Kaymaklı resulted in the overcrowding of the walled city, which in turn led to building of the first houses of the immigrant housing project in the area<sup>11</sup>. The first 32 houses built were built within 10 days. As the overcrowding continued, new houses continued to be built by the Turkish Cypriot authorities, who needed to open a brick factory in the area to assist the construction demands. Within the decade, Göçmenköy saw great urban growth and itself became overcrowded, while a sense of solidarity developed between its inhabitants, named ‘göçmen’ (Turkish for ‘immigrant’).

The multi-phased project was realized in five years, with a great devotion. In the interview with Hakkı Atun<sup>12</sup>, in which he presented information on how it was done with devotion, despite all the negativities of the period, he said that they established brick production facilities and lime kilns in order to quickly finish the first phase of the project; and that they even transported sand, one truck at a time, illegally. He stated that they built the houses as an additional volume block. The land was acquired from a small number of Turkish Cypriot owners, the Aziz Beyli family, the former general manager of the Post Office. He stated that when they continue with the second phase of the project, it was relatively easy to reach materials since some political freedoms were given. He noted that for this stage, the search for land was started again, and this time a land was purchased from the Dr. Küçük estate.

In the construction of these immigrant houses in Göçmenköy, the row houses built in Samanbahça in Nicosia during the end of Ottoman Period and beginning of the British Period, and the Standard Houses built in Kaymaklı during the British Period that were originally inspired by the houses with gardens in England, have been taken as samples<sup>13</sup>, and added that the design of the first and second phases of the Göçmenköy immigrant houses has been made in the most appropriate way to what he has learned, what he knew and the ideal. During Cyprus under British Colonial rule, there has started a tendency to design houses and campuses not only for managers but also for workers, and several plans were produced for this purpose by the Public Works Department (PWD) (Tevfikler Çavuşoğlu, et. al. 2006). The most notable of these is the workers’ houses called Standard Houses campus, which was designed by

11 Cyprus Turkish Administration Public Works and Transportation Affairs Membership (1971), Kıbrıs’ta Göçmenlerin İskanı brochure, Nicosia.

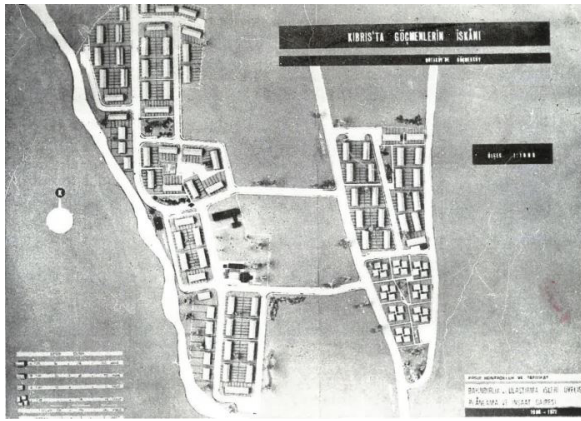
12 Interview with Hakkı Atun, on 03.03.2023, in his office, Nicosia

13 İskâni Devlet I, Göçmenköy - YouTube s:1:49-1:52



William Caruana with governmental support for the Kaymaklı region and built in 1946. As such, it sets an example for the Göçmenköy campus for immigrants.

Ortaköy Göçmenköy project, which was built in the suburbs of Nicosia, consists of two separate parts. Göçmenköy house and road constructions, which were planned according to the understanding of modern urbanism, were built by the Planning and Construction Department. In these two parts of Göçmenköy, there are 452 houses, 2 shops, 1 coffee house, 2 children's playgrounds, a 6-class primary school and 73 parking lots<sup>14</sup>. Ortaköy's Göçmenköy, with a population of 2500, is the best and largest implementation site of the whole Immigrant Settlement Project. With the central water purification system and the rapid delivery of electricity that was not available in the region beforehand, the campus of the houses has been a well-thought-out project (Atun, 2016) (Figure1).



**Figure 1.** Cyprus Turkish Administration Public Works and Transportation Affairs Membership (1971), Kıbrıs'ta Göçmenlerin İskanı brochure, Nicosia.

In order to be the cheapest, the terrace housing typology, which is widely used in England, was referred to within the scope of the project. A 4m façade rule was created for each unit, which was due to the dimensions of the available timber material, that was used as lintel. The houses had areas of around 55-60m<sup>2</sup>, at most. It has been designed to give maximum benefit with the budget assigned to the project. The labors were provided by the work of the mujahideen with their intensive work. The houses costed 500-700 Cyprus Liras, which was also a very low cost during the period. All records were available in the military sources, that since have had the statistical information on family basis, built

<sup>14</sup> Cyprus Turkish Administration Public Works and Transportation Affairs Membership (1971), Kıbrıs'ta Göçmenlerin İskanı brochure, Nicosia (p.10) and speaking with Hakkı Atun for an informal interview on 03.03.2023.



these houses in the light of this information. It started with providing a house to the most disadvantaged. All the houses were the same, but the ones in the corner, for example, had more advantage in terms of having just a bit larger garden. Fairness and justice were the most important reference. On this subject, talking about the fairness in distribution of the houses Hakkı Atun says, “There was no politics at that time”<sup>15</sup>.

Each of the houses was formed by being divided within a single volume (Photograph3) made of flat sheet metal, in a time when even corrugated sheet metal was out of reach<sup>16</sup>. Later, with the participation of building masters who knew the past construction methods, mudbrick was cut, brick and lime kilns were started. A very small amount of cement was tried to be brought, illegally<sup>17</sup>. This was used to make briquettes. Gradually the quality of construction improved.



**Photograph 3.** Cyprus Turkish Administration Public Works and Transportation Affairs Membership (1971), Kıbrıs'ta Göçmenlerin İskanı brochure, Nicosia (p.20).

At that time, there was no settlement around Ortaköy further than the historical bridge made in the Ottoman Period. When the property finding searches were carried out for a convenient place, it was determined that there was a small amount of Turkish-owned land in this region, the majority of which was Greek ownership. It was concluded that when it comes to building the refugee houses, the land should be purchased. The 1st part's land was purchased from the Aziz Beyli family, for a symbolic fee. This was a completely virgin land, having no other construction or built environment (Photograph 4). After 1963, already no one had the strength, possibility and ability to build anyway.

15 [https://www.youtube.com/watch?v=tkTtmA\\_yuco&ab\\_channel=IskaniDevlet](https://www.youtube.com/watch?v=tkTtmA_yuco&ab_channel=IskaniDevlet)

16 Footnote15, s.1.57

17 Between 1963 and 1968, Turkish Cypriots were isolated from their villages by being displaced. Meanwhile, the sale of products, especially construction materials, was prohibited. It was a kind of deterritorialization and nihilation attempt.



**Photograph 4.** Hakkı Atun Archive

In phase 1 of Göçmenköy, it was not possible to use any material other than corrugated zinc for the roof coverings. Material and durability were an issue. There was also a tremendous solution oriented work on the detailing of the material, which could not withstand the problems such as the storm experienced during the ongoing construction process with the aim of bringing welfare to people as soon as possible.

In 1968, there was the Geçitkale Boğaziçi conflict in 1967. After that, with Turkey's intervention, Makarios, on his own initiative, gave freedom of movement to those people who were trapped in cantons and almost lived imprisoned. When the blockade on Turkish society was lifted, construction materials, including cement, began to be sold. Phase 2 of Göçmenköy, thus was built by more proper materials like brick and cement. Land of the 2<sup>nd</sup> phase was purchased from Dr Küçük family. And after 1967, immigrant houses began to be built in all parts of the Cyprus island.

The houses were designed so that each unit had a 4m wide façade. The sole reason behind that decision was because the rafters at hand to be used as lintels were 4m wide, but of course it could achieve the habitable space dimensions. Everything was designed for a fair living, no matter how the conditions were tough or the possibilities were challenging. Idealism ruled in the meanwhile. Kale Bey, the Commander (Sancaktar<sup>18</sup>) of Nicosia, was personally involved in the constructions. Seeing the completion of the row-type housing blocks that were completed in the first phase, the architect and planner of the project Hakkı Atun in his "ideal architect" attitude reacted when asked to paint each house in

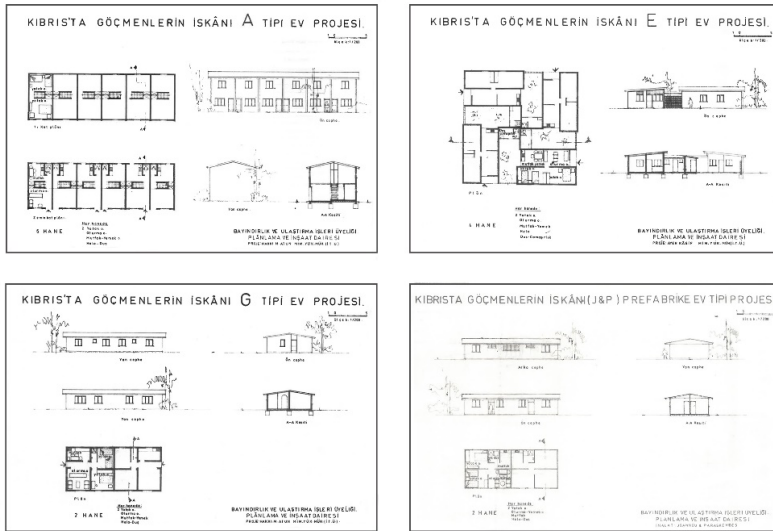
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18 High-ranking army officer from Turkey.

a varying color and said sharply that this would not happen, that they would be painted all in white color, and that the climate required such (Atun, 2016, p.146).

The Ortaköy immigrant houses project, the implementation of which started on May 5, 1966, was continued in two phases. In the project, where the land was also purchased in two phases, a complete campus was designed with buildings to accommodate social needs functions (Figure 1). House typologies have been diversified with the consideration of different needs, suitability for the land and ease of construction. Within the process, especially since the crisis of insufficient builders was born, prefabricated houses supplied from Mahallen J & P firm started to be built. Meanwhile, in the interview with Hakkı Atun, it has been learnt that the United Nations had sent an architect named Alvero Ortega to assist the issue; and the block-of-four houses typology emerged with the suggestions of the architect, who also given his book entitled ‘Self-Help Housing’ to help.

The houses were designed and produced in 8 typologies (A, B, C, D, E, F, G, I); and were completed in two stages. Type A, for example, had single-storey and two-storeys variations. In two-storey version, the spaces are 2 bedrooms on the first floor, living room, kitchen-dining, toilet-shower on the ground floor. Single-storeys consist of 1 bedroom, living room, kitchen-dining, toilet-shower. Also, the single storey ones have 4 houses in the block, while the two-storeys have 6. Samples of the variative types are seen in Figure 2.



**Figure 2:** Cyprus Turkish Administration Public Works and Transportation Affairs Membership (1971), Kıbrıs'ta Göçmenlerin İskanı brochure, Nicosia

Material for the construction of the houses has been a thorny issue, especially during the first phase. Initially, the supply of materials started with the prohibition of the entry of all kinds of construction materials into the Turkish regions, that resulted in the use of any suitable material that could be found with great difficulty. In the continuation of the process, modest material production facilities were built, and later on, with the lifting of the ban on material entry in March 1968, perforated brick for walls, mosaic tiles on the floors and tiles on the roof began to be used, and the resettlement activities of immigrants accelerated (Table 1).

Although it was calculated in the project to construct an equal number of two-bedroom and one-bedroom houses, giving priority to crowded families according to the available scoring system required the construction of two-bedroom houses instead of one-bedroom houses. As a matter of fact, 90% of the houses built have two bedrooms, which required an average surplus of 100£ pounds per house. In addition, indirect costs such as construction of internal roads to the houses, leveling of the land, water and electricity supply from the city line, electrical installations in many places, sewerage and generators were added during the implementation phase, which were not included in the project phase.

**Table 1:** Adapted from Cyprus Turkish Administration Public Works and Transportation Affairs Membership (1971), Kıbrıs'ta Göçmenlerin İskanı brochure, Nicosia (p. 16)

Immigrant House Types	Number Built	Area (m <sup>2</sup> )	First and last construction cost (For each - £)	Number of Rooms	Materials
A Type	530	60	525 - 850	2 bedrooms, sitting room, kitchen, wc-shower	Walls: Perforated bricks, massive brick or concrete brickette Floor: Concrete, mosaic tile, wood, plastic, marble Roof: Corrugated metal sheet, Corrugated asbestos or Marseille tile
A1 Type	22	46	400 – 650	1 bedroom, sitting room, kitchen, wc-shower	Walls: Stone, mud-brick Floor: Concrete Roof: Metal sheet
C Type	8	70	500 – 850	2 bedrooms, sitting room, kitchen, wc-shower	Walls: Perforated bricks Floor: Mosaic tile Roof: Concrete
D Type	124	46	450 - 725	1 bedroom, sitting room, kitchen, wc-shower	Walls: Perforated bricks, massive brick or concrete brickette Floor: Concrete, wood Roof: Corrugated metal sheet, Corrugated asbestos or Marseille tile
E Type	32	60	575 – 850	2 bedrooms, sitting room, kitchen, wc-shower	Walls: Massive brick or concrete brickette Floor: Concrete, marble Roof: Corrugated metal sheet
F Type	101	46	350 – 600	1 bedroom, sitting room, kitchen, wc-shower	Walls: Mud-brick, concrete brickette, metal sheet Floor: Concrete Roof: Corrugated metal sheet
G Type	133	54	450 – 750	2 bedrooms, sitting room, kitchen, wc-shower	Walls: Mud-brick, concrete brickette Floor: Concrete Roof: Corrugated metal sheet, Corrugated tile

I Type	18	60	550 - 850	2 bedrooms, sitting room, kitchen, wc-shower	Walls: Perforated bricks, concrete, brickette Floor: Concrete, Mosaic tile Roof: Marseille tile
Prefabricated (from Turkey)	392	46	630 - 750	2 bedrooms, sitting room, kitchen, wc-shower	Walls: Wood + chipboard + asbestos + glass wool Floor: Concrete Roof: Corrugated metal sheet
Prefabricated (from J&P)	110	53,5	675 - 850	2 bedrooms, sitting room, kitchen, wc-shower	Walls: Wood + chipboard + asbestos + polystyrene Floor: Concrete Roof: Corrugated metal sheet
Total	1470				

These were attempts for the betterment of the physical conditions, together with their moral conditions. Further than the physical dimension merely, the houses turned into intangible dimensions of feelings of security, attachment, strength and meaning that affected deeply lives of the inhabitants. It is clear from the statements of people who live/d in them that these houses provided a life beyond their physical size and condition. Anecdotes provided by the households are very valuable in this study, configuration of which is based on the space. The expressions like “those good times” and “the taste of those tables” are examples of this<sup>19</sup>. Those tiny ‘palaces’ where even relatives from abroad hosted would leave great tastes and memories in their lives.

Hasan Hastürer focused sociologically on “state of being an immigrant villager (Göçmenköylülük)” in the interview<sup>20</sup>. He told how the spirit of immigrant villagers, which still continues today, was established at that time. He talked about how they get ready together with friends of the campus to go to cinema together, and that they usually went to the electricity manager together to beg him not to turn off the electricity, as he says that it was not given on a 24

19 Informal Interview with İlkim Özkan, director at the National Archives and Research Office, as one of the children of the houses, phase1

20 Informal interview with Hasan Hastürer, former primary teacher and journalist, who is among the few who slept on the first night in the single storey unit house of block of four houses, phase1. He states that although they had no privileged conditions in the sharing of the houses, they were amongst the first settlers to the first finished 32 houses. He talks about the fair distribution of the houses based on the real need, as something different from 1974.

hours basis and cut at night time for energy savings, until they finish the film, they were watching on the tv. He talked excitedly when he explained how they established a football team, the uniforms of which everyone bought themselves. He explained that the fact that so many people coming from quite different places formed the same “villager” spirit, and that stems from these experiences; and that this is very important, because it formed a unity that cannot be changed easily, even today. The configuration of the campus made this possible, he expresses, together with also remembering something special as how the four houses of the block were planned wisely (Figure2), in order not to disturb the next household.

Before they settled in the immigrant houses of Göçmenköy, they either stayed in tents, parts in warehouses, settled with their relatives, and as such had the chance to shower once a week, if that was possible for example. Even if they were staying with their relatives in their houses, as the better condition than the others, this was creating problems as a result of the sociological issues associated with building a house upon a house. At those times, not every house had a toilet, for example. After the immigration during 1963-64, some points were turned into public toilets. They were not enough to provide answer to the needs and demand of the immigrant population <sup>21</sup>. Settlement into these housing units also helped with getting rid of such problems, and established a sense of belonging, with the conscious or subconscious knowledge of not having to impose on anybody with the reality of existence of their own home.

Caricaturist Hüseyin Çakmak, again another important figure of Nicosia society, spoke about the development of the status of the region. After a few years past to their finish, the region became mukhtarship in 1980. Afterwards, in 1985, its status became to be a region within the Nicosia Turkish Municipality, and with the latest elections in December 2022, it just arbitrarily turned into a street. Besides this, he stated that when he first moves in the region at his early childhood in 1968, he noticed this with his child perception: crowds of people, crowds of children, and plenty of playgrounds. We lived in the ghetto; we couldn't go anywhere. Not only me, but also many people who moved to that village were people living in Nicosia. In other words, people did not escape from varying village, and came to Göçmenköy immediately due to Greek pressure, no. People were living in the Nicosia ghetto, in bad conditions. Playing fields

21 Yeraltı Notları, 30 December 2005, *Sevgül Uludağ*: Lefkoşa'nın belleğine yolculuk: Hüseyin Çakmak. Last retrieved March2023.

[https://www.stwing.upenn.edu/~durduran/hamambocu/authors/svg/svg11\\_30\\_2005.html](https://www.stwing.upenn.edu/~durduran/hamambocu/authors/svg/svg11_30_2005.html)



were limited, places to go were limited, Greek, UN and mujahideen trenches were everywhere; and continued: “Immigration was a feeling of freedom!”<sup>22</sup>

Later in the process, with the change of conditions, the users made changes in the houses, and they were instrumental in the disturbing change of the whole, which was created with add-ons, which disrupted the structure of the campus, leading to today’s situation. For this situation, it can be evaluated that the perception of houses as ‘more than enough’ by their inhabitants has changed, as the conditions that make them feel valuable have changed over time, and that they started to be seen as insufficient.

## 5. CONCLUDING REMARKS

The case being as such, the houses that were built as almost beyond the tent, with their minimum of possibilities and their plain spaces, erased the uncomfortable feeling of the displaced people, due to their changing places. This is where the questioning about the space becomes very important. The spaces, which could scarcely provide even the most basic answers that can be expected from a building when they were built, offered the beauties of the ‘palaces’ to the users within the conditions of the period. People, combined with the feeling of making one feel weak, fragile and vulnerable, in all worrisome conditions such as fear of war, famine, poverty, and fear of life, as well as the resulting displacement, evaluate their tiny houses as the most comfortable palaces, according to the conditions in which they live. They saw it as the greatest comfort provider they could give. Bachelard, in his book *The Poetics of Space*, focuses on the dialectic of inside and outside, and the contrast of smallness and bigness. He states that a Platonic dialectic of major and minor is not sufficient to recognize the dynamic and special characteristics of miniature spaces. According to Bachelard, in order to understand and reveal the greatness that exists in the small, it is necessary to go beyond the general logic of geometric similarities. For Bachelard, “geometry sees exactly the same thing in two similar figures drawn at different scales,” and in this respect, small-scale drawings do not contain any of the problems with the philosophy of the imagination (2014, pp. 166-167). However, the gaze of the “man with a magnifying glass” transcends the geometric view. The magnifying glass allows people to see details. Sometimes, the small one, even if the door is narrow, or possibilities too limited, opens a huge world ahead, providing the

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22 Informal Interview with Hüseyin Çakmak, Caricaturist, as one of the inhabitants of the houses of Göçmenköy. He both provided historical information and made phenomenological interpretations.

opportunity to “build houses small enough to fit inside a pea” (Bachelard, 2014, p.173).

When looking at the concept of home for displaced people seeking a safe life due to war and unbearable living conditions under pressure, from the perspective of Lefebvre’s production of space, it is seen that the conjectural perception of space, especially home space, may differ. Lefebvre’s rejection of space to be limited to a “pre-existing void” that is associated with only the formal properties, is based on the idea that to criticize and reject absolute space is simply the refusal to a particular representation, a container waiting to be filled with a content like matter or bodies (Lefebvre, 1991, p.170). The limited opportunities that would seem otherwise as having no room to swing a cat, now were perceived as the most beautiful, wonderful.

The effort put to realize them was, of course, very beautiful and wonderful. As stated by Hakkı Atun, “there was no politics” in their effort; and from soldiers to ruling people, all the effort was put, with a great dedication to help people have a house. These houses were turned into homes by their inhabitants.

This study, which is intended to subject mainly Ortaköy’s Göçmenköy immigrant houses, which can be considered as the most important part of this original and valuable ‘Immigrants’ Settlement Project’. Valuable data about the project has not been recorded enough, except for a YouTube video, the “Immigrants’ Settlement in Cyprus” brochure from May 1971, and a briefly mentioning in a book. It is aimed to note down the interpretation of space according to various conjunctural conditions, for which information is compiled mostly by narratives, both from the project leader and implementer Hakkı Atun, and people who lived in them.

Despite their modest structures (material, sincerity, workmanship) reflecting the spirit of the time and their smallness, it is apparent that these houses provided the users with an unexpected amount of, or great comfort as is evident from the informal interviews with the users. With this point of view, we can turn to listen to Pallasmaa, who reveals that architecture should have a liberating or therapeutic role rather than reinforcing the erosion of the meaning of existence, by suggesting that we should ponder on how many hidden forms the art of architecture is connected to the cultural and mental reality of its time (Pallasmaa, 2005, p.43). We must be aware of the various ways in which the feasibility of architecture is affected by current political, cultural, economic, cognitive and perceptual developments.

Every immersive experience of architecture is a multisensory experience, and each of these senses has an equal share in perceiving its attributes related to the space, matter, and conditions. Perception may differ in parallel with differentiating conditions. The main benefit of the house, as stated by Bachelard (1971), is to be a shelter for dreams. Furthermore, space prevents them from getting lost by framing, reinforcing and focusing what human beings can think, as a powerful way of liberation. Human beings can sense and dream their presence outside as well, but they need the geometry of space to be able to think clearly. The geometry of thought echoes the geometry of space (Pallasmaa, 2005, p.56). It is for these reasons that the right to shelter is a fundamental human right, and these houses are also very important in this sense. Maybe just because of this, they were perceived spiritually as huge by the people they housed.

Immigration and the immigrant's home issues are often dealt within a transnational context. However, the immigration of people in Cyprus took place in their own homeland. People became refugees in their own homeland. Life in Cyprus has never been the same, both socially, economically and psychologically. It was such a time that the displaced people were trying to take root again in their own homeland, had to start life from scratch and try to do this out of their unique environment. They felt stranger in their own homeland. In the first place, neither the place they went to accepted these displaced people nor they accepted the place they went to.

Fortunately, the 'Immigrant Settlement Project' of the Turkish Cypriot Administration was achieved with successful implementations. In this chapter, it is aimed to publish one of these projects. The project was successful, because, owing to it, these people were somehow happy. There were no more 'trenches', no 'barricades' around. They were not sheltered in tents, or had to live with anyone as freeloader settlers; they weren't be askew anymore. After a while, they bonded with each other, and having their schools, clubs, cafes and such time-sharing possibilities in their campus this bond strengthened.

In the light of all this, the houses, which were merely thought of as spaces that could be easily produced with only limited resources, workforce and materials, when they were designed, had been perceived above 'enough' in all these social, economic, security and psychological contexts, in the self-evaluation of them by the homeowners. This chapter aimed to convey how this perception is affected by the complexity of factors and to publish these houses, thus recording them to history, which are almost not published elsewhere, within the framework of the complex concept of interiority.

Thus, when conditions changed, bringing about a change in the perception of their home due to the multifaceted factors as discussed in this chapter, these tiny houses that were once seen as palaces at the time back in the hard situation, started to become insufficient. Today, there is an apparent failure to preserve their character. Massive additions, variations, haphazard organizations abundantly applied to the houses of the campus are all resulting from the alteration of perception in terms of the adequacy, material and moral, of the home environments in changing conditions.

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## CHAPTER VI

# SYSTEMATIC PATTERNS OF DESIGN OF A CONCEPTUAL APPROACH TO INTERIOR ARCHITECTURE

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### 1. INTRODUCTION

The purpose of this chapter aims to provide focused and informative content on designing conceptual approaches for interior architecture projects. Developing a concept in interior architecture is a challenging yet crucial phase of the design process. The lack of a good conceptual approach to interior architecture projects ends up in the creation of spaces that lack character, evoke no emotion, and have no sensory appreciation. Interior architecture is about understanding the various themes and qualities of the interior space. This understanding is an essential component of concept development for interior architecture projects and one of the most powerful skills interior architects can wield.

Interior architecture concepts can be developed based on many different starting points, but what always remains the same is that the concepts should be in the same direction as the design project. In this chapter, I will focus on the preparation phase of the design project and discuss how each of these phases can contribute to developing a design concept for interior spaces. In addition, this chapter will suggest skills and exercises that will help interior architecture students or young interior architects develop their way of concept development.

This chapter emphasizes the importance of considering interior architecture as a profession based on physical, social, psychological, emotional, functional, intellectual, environmental, and contextual issues rather than a final look or image. The theoretical framework proposed in this chapter can be used by



students, educators, and as well as anyone interested in designing identical interiors.

## 2. BACKGROUND OF THE STUDY

The design concept is a formulation that identifies the design intentions and provides a framework with a set of guidelines that guide the project from the early stages of schematic design to the final stages when construction is complete. In short, an interior architecture concept can be described as the main idea behind the proposed project. The interior concept expresses the ‘essence’, the ‘theme’, or the “soul” of the interior. A good design concept can make an interior interesting and give meaning to the environment. The design concept also guides designers’ thinking and design decisions (Bradley, 2017).

The design concept is a dominant theme that guides all design elements which begins as an idea and is then translated into reality with careful planning (Wolfe, 2022). The design concept is also a statement that expresses the essence of the interior space. A good concept conveys the vision of the space, addresses the layout and application of the design, expresses the ambiance, embraces the originality of the design, and demonstrates the symbiotic relationship between the main idea and the physical elements (Thomas, 2021).

A design concept is the DNA of a project, and it is critical to stick to that DNA or the project will not flow properly and look consistent overall. A common mistake is for designers to focus on an idea too early and develop a corresponding design too quickly. Interior concept development is a slow process and should not be rushed before ideas have been vetted and evaluated. The result of a design without a well-thought-out concept is an interior that does not meet all the requirements of the project, resulting in higher subsequent costs as changes must be made to correct problems later during the construction phase (YR Architecture + Design, 2020).

Finding a novel and original concept is one of the crucial dimensions of a designer’s work, and creativity is considered a key element of this progress. The important role of creativity in developing a design concept encourages designers, especially young designers, to understand creativity and find methods to improve their creative performance. It has been discussed that the phenomenon of creativity in design is still relatively underdeveloped (Askland et al., 2010), but this does not mean that creativity is not being researched, as there is a large body of research that addresses almost every dimension of creativity.

The challenge with creativity is that it remains a contradictory topic despite the enormous amount of critical research on the topic (Williams et al., 2010).

The confusion over the ‘design concept’ subject begins in education. Interior architecture students have difficulty understanding the essence of ‘creating a design concept’ for their projects. One of the main reasons students have difficulty using creative thinking for their concept development is the lack of clear evaluation of their conceptual approaches, which prevents them from understanding what factors will evaluate their creative efforts (Williams, Ostwald & Askland, 2011, Bachman & Bachman, 2006; Ostwald & Williams, 2008). Personal differences in understanding creativity are another reason that can make conceptual development confusing for students. This is the case when there is a wide gap between instructors and learners in defining and understanding creativity (Davis, 1993, Philips & Wilen, 1995). While some instructors insist on originality, imagination, and experimentation, other instructors may prefer to emphasize technical and functional aspects (Mahboub, et al. 2004).

Badenduck (2022) highlights the fact that there is a wide range of perspectives on the design concept and it is impossible to summarize a single definition of the subject. Among the many definitions, I would like to point out some of the statements about design concepts in the field of interior design and architecture. Stephanie Travis (2011) defines design concept as the main idea or big idea that guides all design decisions. Using a similar substantive pattern, Higgins (2015, p. 36) defines a design concept as “an abstraction or general idea that can inform decisions made during the design process so that the built result is more coherent”.

Studies show that many like Travis and Higgins agree in defining ‘design concept’ as ‘the big idea’ (Badenduck, 2022). However, Sol Lewitt (1969) argues in his text ‘Sentences on Conceptual Art’ that “concept and idea are distinct and ideas implement concept (cited in 1967, p.107).” Lewitt made this statement about conceptual art, and of course, interior architecture cannot be considered art on its own, but his statement opens a discussion about the definition of the design concept as a ‘big idea’.

Rengel’s (2019, p.139) definition of a design concept as “a general strategy or approach for the solution of a design problem in a very specific way” highlights the fact that a design concept about interiors is more than just a ‘big idea’. Rengel goes on to discuss that interior design projects consist of a variety of design problems and that a single concept would not suffice. According to him, “there can be dozens of concepts for a single project.”

Similar to Rengle, Kaya, and Bilgiç (2020, p. 275) define a design concept as “a transformation of the ideas that the designer develops to solve the design problem,” and they emphasize that concept development requires both verbal and visual skills. According to Kaya and Bilgiç, concept development requires an understanding of communication between the space and the users, which means “striving to get the most out of a design according to the spatial requirements and user preferences”.

Considering the above definitions, it seems necessary to understand what interior architects deal with professionally and define the design concept accordingly. Interior architects are responsible for planning and designing interiors, and to fulfill this responsibility, they must consider and go through many variables. Higgins (2015) suggests four starting points for interior design projects. According to his classification, “the client, the programme, the site, and the design approach can be considered as common starting points for an interior design project. Leydecker (2013) goes further and describes the necessary design inputs that need to be considered in order to create a concept that meets the different levels of interior architecture projects. These design inputs are:

1. Location: Cultural and contextual concerns vary depending on the location of the project.
2. Regulations and context: Regulations applicable to interior architecture projects also vary by location, but generally these regulations consist of health and safety codes, codes, standards, energy safety codes, fire codes, etc.
3. Timeframe: Projects interact with economic, environmental, social, and technological developments at the time of project implementation.
4. Boundaries: Client needs and functional and psychological considerations create boundaries for each project.
5. Budget: The budget of any project imposes constraints on design.

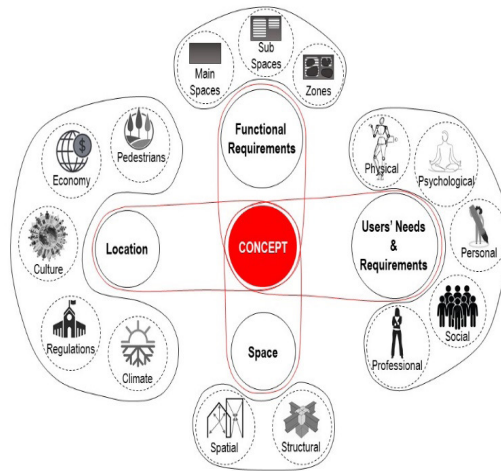
Design is undoubtedly an evidence-based progression and requires measurement, analysis, and observation. Therefore, conceptual development for interior architects requires creative thinking and an understanding of a variety of qualities that are deeply layered in an interior space (Coles and House, 2007). In the following sections, I will discuss the steps required to develop a concept that encompasses the interior space as a coherent whole.

### **3. RESEARCH**

Research is an important step at the beginning of any work. Behind a bad concept is usually a lack of sufficient research. A good idea for developing a

good design concept for an interior design project can be very inadequate when it comes to a necessary design solution. The previous section discussed that a good interior design concept must respond to existing design solutions. Determining design solutions and understanding the technical and functional requirements of the project requires sensitive and thorough research.

Many studies emphasize the need to incorporate research into interior design education (Dickinson et al., 2007; Guerin & Thompson, 2004; Hasell & Scott, 1996). Similarly, many educators such as Fisher (2004), Kieran (2007), and Kroelinger (2007) emphasize the importance of good research in implementing good design solutions. Students generally view research as sifting through design examples with a similar function in hand as a design project. In addition, many students limit themselves to visual research without reading project descriptions. However, Dickinson et al. (2007, p. 3) speak of research for design: “research is more than collecting information,” and Leedy and Ormrod (2005, p. 2) assert that “research is a systematic process of collecting, analyzing, and interpreting information to communicate what we discover”.



**Figure 1.** Necessary steps for comprehensive research before developing a design concept for an interior architecture project

Figure 1 shows the necessary steps for comprehensive research before developing a design concept for an interior architecture project. The description of each step is as follows:

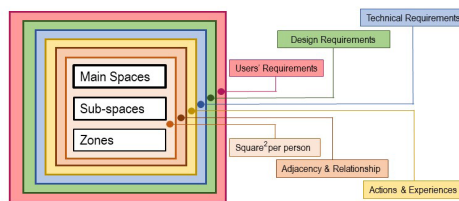
- Location: A research report on the climate, pedestrians and landscape, culture, economy, and regional rules and regulations must be prepared.

- Space: Every aspect of the interior space such as structure, openings, form, surfaces, mechanical systems, space organization, etc. should be captured. Swot analysis must be performed for all of these subjects.

- User Profile: Understand how well users see the space and what their requirements and needs are to have a healthy and happy experience in that space.

- Function: Research on function means looking at successful and unsuccessful examples of similar functions to understand what should and should not be included in the design. Functional solutions have a multitude of dimensions, and therefore a visual survey of existing patterns of design is not sufficient to create a functional space. Researching the necessities for functional solutions means learning about the necessary technical, aesthetic, spatial, and structural features.

The second step of design research is analysis, which means evaluating the data collected and eliminating the unnecessary to keep only what is necessary for your design project. The third and final step is to interpret the data you have retained. Write short notes or short sentences about why you are keeping data or why this data is important. This will help you organize and reasonably decide on your ideas. At this point, creating a building programme might be a good option to keep a short and clear vision in mind. A building programme is also called an ‘architectural programme’, ‘facility programming’, or ‘functional and operational requirements’ and ‘scoping’. Figure 2 shows the necessary aspects of creating a building programme (Cherry, 2016).



**Figure 2.** Necessary considerations for the creation of a building programme for an interior architecture project

#### 4. PATTERNS OF CREATIVE THINKING

Creativity is the essence of design. Some people may seem to have a natural flair for being creative. This is true, but many designers can find a way to create interesting and also appropriate conceptual directions because it is possible

for designers to develop methods of thinking (Higgins, 2015). “Creativity is often associated with abrupt “lightbulb” moments of inspiration but, in reality, creative thinking and problem-solving are highly process-oriented activities (Badenduck, 2022, p.92)”.

The Council of Interior Design Accreditation (CIDA) claims that education programs should train students in creative thinking and problem-solving (National Council for Interior Design Qualification, 2004). “Creativity has been viewed as a key component of original and useful design solutions. The development of creative thinking was seen as an essential part of design and education”.

“Heightened creativity will enable design students to become more effective as the demands of the interior design profession increase (Portillo, 1996, p. 15)”. It’s discussed that creative thinking can be taught and improved (Kaya and Bilgiç, 2020). As Nussbaum (2013, pp. 38-39) states, “creativity is something we do, not something that happens to us. It’s the hard work and collaboration that can help bring an idea out of the mind and into the world”. This section discusses basic behaviors that support students’ creative thinking.

#### ***4.1. Reading***

According to the World Literacy Foundation (2021), reading promotes imagination, and imagination is an essential pattern of the creative mind. Angus Fletcher, a story researcher, states that “stories activate everything the brain can do.” With this statement, he sees stories not only as entertainment but also as a great resource to enhance imagination (Bishoff, 2021). Since creativity goes hand in hand with the ability to imagine, reading can be seen as a good habit to foster the creative mind (Kaya and Bilgiç, 2020).

A review of the research also highlights numerous findings and demonstrates the positive influence of reading on creative thinking. For example, Vygotsky (1986) and Piaget (2002) have discussed the relationship between thinking skills and language development, which allows creativity researchers such as Wang (2010) to link creative thinking with literacy skills. Similarly, studies examining the relationship between reading and creativity have underscored that reading promotes better communication skills and the ability to communicate ideas plays an important role in supporting creative thinking (Beghetto, 2005; Cropley, 1997; Gardner, 1988).

## ***4.2. Curiosity and Exploration***

Kashdan and Silva (2009) defined curiosity as “the recognition, pursuit, and intense desire to explore new, challenging, and uncertain events”. This definition shows the close connection between ‘being curious enough to explore’ and ‘creative thinking’. Faisal Hoque (2014, p.), the founder of Shadoka (a company dedicated to creativity), states in his book that “new experiences are the fuel of creativity and curiosity is the thirst that drives these new experiences”.

It is discussed that you can develop your curiosity through repeated practice. Elizabeth Gilbert (2015), author of ‘Big Magic: Creative Living Beyond Fear’, explains that the key to a creative life is to follow curiosity rather than passion. Sometimes creative thoughts lie hidden outside our interests and comfort zone. To get to those ideas, we need to go beyond our concerns and seek out new experiences, even if they do not satisfy or please us. Some of the exercises that are said to support curiosity and interest in exploration for designers are as follows (Percival, n.d.):

1. Keep learning new things, take classes, and experiment with new techniques
2. Read design books and blogs
3. Be open to new experiences
4. Ask lots of questions
5. Be observant
6. Take risks
7. Embrace failure

## **5. Concept Mapping**

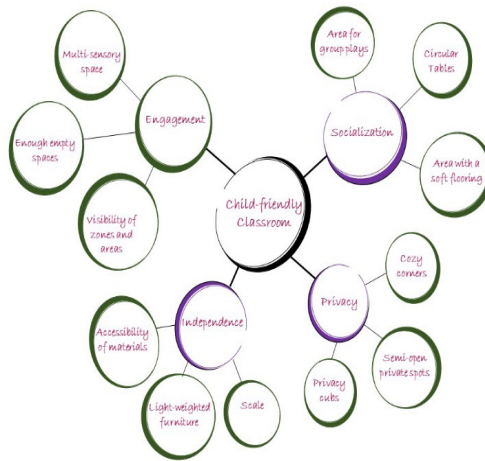
Concept mapping is recognized as a very useful learning method in education (Novak, 1991). Concept mapping is commonly confused with mind mapping, but there are some differences. Mind mapping is spontaneous and there is no need to form ideas that are connected, while concept mapping is a structured method to outline the relationship between ideas (Davies, 2011). Concept mapping can be defined as a visual presentation model for listing the important aspects of design ideas in the mind (Ruiz-Primo and Shavelson, 1996). Oxman (2004) describes a concept map as “a particular form of diagram for exploring knowledge and sharing and collecting information. It was originally



proposed as a tool to develop an understanding of a particular body of knowledge by making the knowledge explicit”.

Based on the above definitions, extensive research in the initial stages of design and understanding the project at hand is an important step to take prior to creating the concept map. A concept map is usually created in writing, but can also be created using images depending on interest. The concept mapping process begins by writing down or visualizing the ideas on paper and then making a connection/relationship between the written ideas. Once the connections and ideas are listed, one can begin to propose the ideas that best fit the design problems/solutions for a project (Kaya and Bilgiç, 2020).

Concept maps are categorized as spider, flowchart, hierarchy, and system maps. Among these categories, a spider map seems to be the best option for developing a conceptual statement. In a spider map, the main theme (a big idea or starting point) is the focus, and the other ideas that complement the main idea are arranged around the central theme. Figure 3 shows an example of creating a spider map to develop an interior concept. Creating a concept map is a good way to record findings and ideas on a paper and to include or exclude ideas in response to existing design inputs.



**Figure 3.** An example showing a spider map for developing a concept for a preschool classroom

## 6. Delivering and Communicating the Concept

Studies emphasize the importance of visual presentation for interior designers as a means of self-expression and communication with others (Diekman

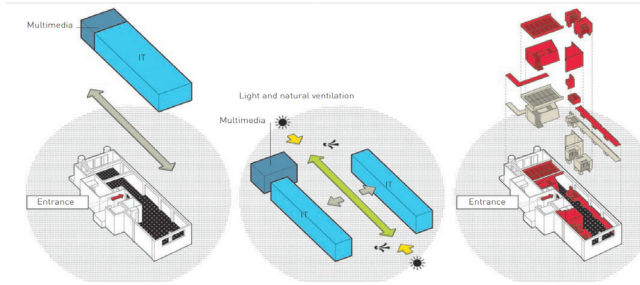
& Pile, 1983, Ching, 1985, Laseau, 2001). Communicating or conveying the interior design concept to the client, educator, or anyone who is the audience is as important as developing the concept itself. Communication of the concept can be divided into two main stages.

Stage one is the early concept presentation, which involves communicating ideas on paper and visualizing the relationship between the ideas and the structure, functionality, and human interaction. Natalie Badenduck (2023) refers to this stage as internal communication, in which the designer communicates ideas with an internal audience such as team members, colleagues, or instructors. The important challenge in this phase is for students to learn to communicate their ideas in person as they create their concept and then later reframe the presentation to communicate their early conceptual approach to others. Suggested methods include sketching, modeling, detailing, mood boards, concept maps, or a combination of one or more of these.

The second phase is about clarifying the relationship between the concept and the final project. In this phase, the design proposal is complete and the goal is to communicate the conceptual approach behind the design solutions, the spatial and functional organization, and the esthetic features. Natalie Badenduck (2023) refers to this phase as external communication, where designers are generally expected to communicate their ideas to an audience with limited design knowledge, such as clients or potential clients. At this stage, the presentation should be professional and engaging. The conceptual presentation should:

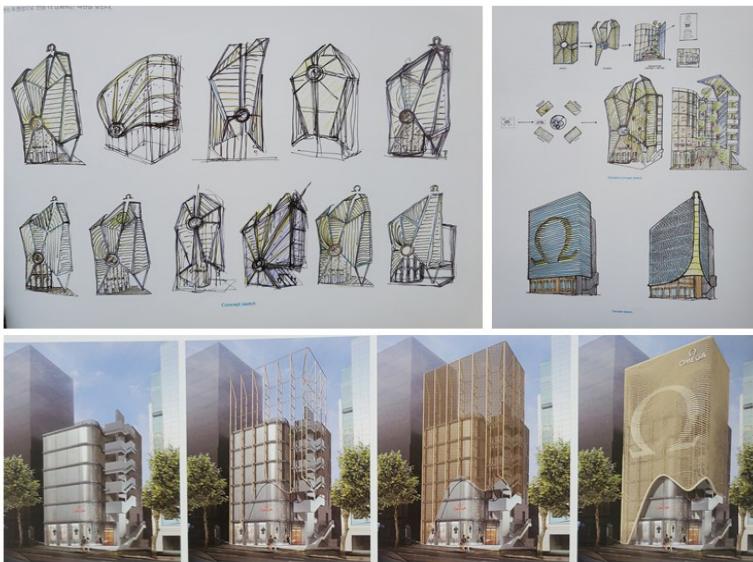
1. Have an interesting story to tell: Present a scenario that shows the audience the original aspects of the design
2. Have a name: find an appealing name, tagline, and statement that summarizes the conceptual approach
3. Be simple: Highlight the most important ideas and leave out anything unnecessary

Concept diagrams can be considered a useful presentation method that can be used to communicate the concept of interior spaces. “To some degree, all interior design drawings are diagrams - an abstract representation of the proposed built reality. In this context, the term ‘diagram’ is used to describe how abstraction can allow complex ideas and relationships to be communicated simply and clearly through graphic representation (Higgins, 2015, p.157)”.



**Figure 4.** A diagram that uses an axonometric format to explain the strategy of the spatial organization (cited in Higgins, 2015, p.157)

The type of diagram generally used to express design concepts is called a parti diagram. The name parti comes from the French meaning ‘to make the decision’ or ‘choice’ and graphically describes the intent(s) of the design ideas (Singh, 2017). “The parti is typically derived after the concept has been defined; it refers to the arrangement of elements within the totality of the project (Simitch and Warke, 2014, p.24)” Stephanie Travis (2011) defines the challenge of using a parti diagram as the difficulty of visually representing an idea in an abstract form. According to him, the key is to use the conceptual idea(s) to guide the interior and visually represent that effect.



**Figure 5.** Example of using a conceptual diagram for representing the conceptual approach of building and façade design of the Omega flagship store in Seoul, Korea (cites in Lee, et. al, 2018, p. 121-124)

The final skill required for good concept communication is impressive oral communication. Good verbal expression of the design concept is very much related to a good selection of words and phrases that present the ideas briefly, in a logical order, and in an impressive manner. Researchers assert that criteria such as articulation, mannerisms, eye contact, confidence, organization, self-efficacy, clarity, and timing are important aspects of verbal communication (Gaffney 2011; Magin & Helmore 2001; Tucker & McCarthy 2001). Similar aspects are necessary for interior architecture students if they want to make an impressive oral presentation not only of their concepts but also of the entire design project.

With the increase in using digital modeling programs by students, the risk of graduates starting their professional life only by relying on their graphic presentation skills is rising (Hynes & Kwon, 2017). As Rita Carson Guest (2010, p. 171) states “Communication is the single ingredient that separates the successful interior designer from others”.

According to the findings of Hynes and Kwon (2018), the most effective intervention to improve students’ oral presentation performance was not to increase the number of oral presentations, but to consistently introduce new in-class activities that included critiques and written self-assessments. In another study Hynes and Kwon (2018) emphasize the role of students’ critical thinking in their oral presentation performance.

Kucko and Caldwell (1994) have discussed a design studio environment that encourages critical thinking and inspires students to explore and analyzes various issues and theories. Based on their study, Table 1 shows the comparison of a traditional Interior design studio with one that fosters critical thinking.

**Table 1:** Comparison of a traditional Interior design studio with one that fosters critical thinking (Proposed in a study by Kucko and Caldwell, 1994)

<b>Traditional Interior Design Studio</b>	<b>Interior Design Studio That Fosters Critical Thinking</b>
<p>Professor serves as an information provider by contributing information to students.</p> <p>The goals for the class are predetermined and presented to the class.</p> <p>Interior design projects are predetermined and include background information, project requirements, time frame for completion, and evaluation criteria.</p> <p>Professor establishes the objectives for the day and establishes the tasks to be completed.</p> <p>Professor defines and presents issues and problems pertaining to the design situation.</p> <p>Professor works independently with students and leads periodic class critiques.</p> <p>Studios are sequentially planned and executed. Little time for change or alteration.</p> <p>Completion of all course objectives and scheduled assignments and projects are given priority.</p>	<p>Students are responsible for learning and serve as information seekers. Professor serves as facilitator.</p> <p>The students are conferred regarding their perceptions of goals; Goals for the course are solidified.</p> <p>Professor introduces the project. Students define the project, gather information, develop the program and time schedule, and assist in the formulation of the evaluation criteria.</p> <p>Students discuss and formulate the daily objectives and establish the tasks to be completed.</p> <p>Students discover and discuss the issues and concerns related to the design project. Students lead the critique sessions, which are frequently held in groups rather than with the entire class.</p> <p>Goals are established and a preliminary plan for execution is determined. Tolerance for flexibility that is maximized.</p> <p>The process is valued over the product.</p> <p>Course objectives and assignments are altered to maximize learning experience and depth.</p>

## 7. Conclusion

Eidson (1986, p.23) considers concept as one of the main methods of critical thinking in interior design. She defines the design concept as “clearly presenting a unified design idea. The design shows originality, sincerity, and is an extension of realized experience. A sense of place has been established”. The design concept is an important part of interior architecture projects, and developing a good concept takes practice.

In this chapter, I have discussed the steps necessary to design conceptual approaches to interior architecture that are original and encompass a variety of qualities deeply layered within an interior space. Since the design concept is one of the most confusing topics in the education of interior architecture, this chapter has mainly focused on the necessary habits, methods, and exercises that help interior architecture students practice concept development before they begin their professional journey. Concept development should begin with thorough research to determine the necessary design solutions and understand the technical and functional requirements. Design research should begin with information gathering and continue with good analysis and interpretation of the information gathered. The results of the research should be organized and summarized in an understandable and clear format.

Developing creative and critical thinking skills is another step that would help students develop concepts. Integrating reading into daily routines, including exercises that support curiosity and exploration, can be considered patterns that would help improve students' critical thinking. To develop creative thinking patterns, this chapter suggests that students go beyond their familiar patterns in daily routines and seek out new experiences, even if those experiences are not satisfying or enjoyable for them.

Another step is to try different techniques to find the best method for developing a concept in the early stages of design. It is normal for each designer to have a personal method of concept development, but this is achieved through trial and error and experience. In this chapter, informative methods such as concept mapping are proposed because informative methods allow students to work on concepts that explore the connections and relationships of ideas to design solutions.

Finally, improving verbal and visual presentation skills is the last step which means finding the best technique for delivering the conceptual approach to the audience. Taking a presentation seriously from the beginning to the end of the design can facilitate the concept development process. Students or young interior architects can improve their presentation performance by first working on internal communication, i.e., presenting their ideas and concepts to themselves, fellow students, or instructors, and then revising presentation techniques for external communication, i.e., presenting the link between the concept and the design proposal in a professional and formal format for the external audience, such as the client or jury members.

The concept is a very important matter in today's society. "At the most basic level, the concept articulates what design is about and provides a measure of the effectiveness of particular design measures as the project progresses (Teal and Loo, p. 212)". Research that attempts to unpack the notion of design concept is of great importance, and further studies need to be conducted to provide a clear overview of the performative progress of concept development in the design studio.

This chapter offers initial insights into necessary steps and practices that would improve the concept development phase for interior architecture projects. Although the data comes from existing research and valuable testimony from designers, further research on the application of these practices in the design studio could be considered to verify which of these suggestions are successful in improving student concept development.

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## CHAPTER VII

# A CRITICAL REVIEW OF THEORETICAL APPROACHES IN INTERIOR DESIGN

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### 1. Introduction

Interior design is a considerably young discipline in the scholarly research of design, and extends knowledge to understand the interactions between people and interior space. Historically, interior design has been interpreted as the extension of other related disciplines and has blurred boundaries with architecture, arts, and design, creating a contested territory and complex nature of research for the discipline (Fleming et al., 2011). Hollis (2007) described interior design as slippery and difficult to define, having strengths by being interdisciplinary and, on the contrary, causing frustrations due to the inability to define discipline-specific knowledge. Accordingly, there has been an acknowledgement of the broad characteristics of interior design, giving the discipline freedom and expansiveness in both theoretical and practical explorations. Nevertheless, there have also been calls for more bounded or tighter definitions, as the loosely defined characteristics of interior design are viewed as problematic in establishing the discipline as a serious profession (Cys, 2009).

Similarly, since the early 1970s, the absence of specialized theory in interior design has been a concern for many scholars in the field. Names like Thomson (1978), Hewlett (1985), Hasell (1993), Loustou (1988), and other published works by Clemons and Eckman (2016) and Bae et al. (2019) explored the multi-disciplinary nature of the interior design discipline and interior design researchers' borrowing of theories from the other disciplines. Even though the multi-disciplinary nature adds richness to interior design, it is criticized for decades that there is a gap in the building of theory uniquely for interior design,

and the efficacy of borrowed theories is questioned as in particular cases they are forced to fit the problem, being inadequate to describe the underlying variables of the interior design (Hillier and Leaman, 1978; Tate & Smith, 1986; Guerin, 1991).

To review this gap and use of theory in interior design, this research extends the works of the stated scholars (Thomson, 1978; Hewlett, 1985; Hasell, 1993; Loustou, 1988; Clemons & Eckman, 2016; Bae et. al. 2019) that cover the published interior design research until 2016, and focuses on the latest body of knowledge by exploring the scientific articles of the selected interior design journals- "*Journal of Interior Design*"; "*Interiors: Design, Architecture, Culture*"; "*The Interior Design/Interior Architecture Educators Association Journal*"; "*Journal of Interior Design and Academy*" issued in 2021 and 2022. As theory-based research is essential in advancing the discipline (Hunt, 1991; Wacker, 1998; Imenda, 2014), periodic analysis of the scientific journals is important (Goldsmith, 1983) to acknowledge the progression of scholarly research in interior design. Theory-building is highly important for the development of the body of knowledge (Strauss & Corbin, 1990), and it is essential to keep up with changes and transformations in humans' ways of being, trends, and many other technological developments of the century that directly or indirectly affect the field of interior design.

Hence, to address the importance of theory in research, the objective of this study is to review theory-based articles that are published in the selected four academic journals and explore the use and application of each theory to the discipline of interior design. The research presents the prevalent theory on the latest literature of interior design and questions the existence of a theory specific to interior design.

## **2. Literature Review**

According to Abend (2008), theory is a crucial system that sets the relationship between the variables and allows researchers to explain particular factors, conditions, and phenomena. Hunt (1991) describes theory as crucial support for researchers to build on novel ideas and provides a philosophical guidance on implementing the research. Theory is an important part of the research, allowing reasonable explanations of the connected relationships among these variables via precise predictions and explanations (Wacker, 1998). Imenda (2014) defines the features of a theory as (a) an interrelated descriptions and intentions presented from a systematic point of view; (b) a specification of



relationships among concepts; and (c) an explanation of happenings based on the specified relationships. Putting these elements together, “good theory” is a very unique, distinguishable, precise definition of any variable and relationships that are repeatedly experimented with and confirmed (Wacker, 1998). Accordingly, theory building is an important issue for advancing the knowledge of the disciplines. Grounded theory is one of those research methods that discovers theory from data and involves theory-building processes via generating concepts, establishing systematic relationships between concepts, and inviting initiation. It provides active engagement between educators and practitioners in the process of theory building (Strauss & Corbin, 1990).

Thomson (1978) also emphasized the significance of theory for interior design and pointed out the lack of theory building in the field. Likewise, Hewlett (1985) indicated a “lack of sensibility” and “limited awareness” of the “*human depth of which interior design is capable (p. 10).*” Tate and Smith (1986) also expressed that there is hardly any consistent methodology or deep theories of interior design to guide specialists or professional judgements, and there is a need for a theoretical branch of inquiry for testing new ideas. Regarding the limited number of theory in interior design, Hasell and Benhamou (1988) said that interior designers use concepts in their projects but rarely present them as theories that explain the underlying relationships among behavior, design, and environment or particular phenomena. Similarly, Eidson (1986) described theory as an evaluative criterion to judge design work, yet it has been criticized that few design educators have created theories to fully acknowledge the design phenomenon. And, Hasell (1993) said the challenge should not always be on making better interior environments but also on producing creative theories of explanation.

According to Loustou (1988), no theory has been developed specific to the discipline of interior design. Almost a decade before this statement, Hillier and Leaman (1978) stated that theories are borrowed from other related disciplines and forced to fit the problem rather than being creative or adequate theories to adapt to interior design (Guerin, 1991; Marshall-Baker, 2000). Hasell (1993) and Kaukas (2001) also claimed that borrowed theories are mostly social science theories concerned with the understanding of behavioral interactions between humans and space. Recent studies by Clemons and Eckman (2016) and Bae et al. (2019) relatedly discussed the borrowing of theories by interior design researchers and the problematic pattern of building theories uniquely for interior design.

### 3. Methodology

This study was developed based on the content analysis technique and includes a systematic review of theory-based articles within the limitations of the research. The content analysis technique allows identification of words, texts, and any other data to retrieve meanings and make valid inferences from the data sources (Krippendorf, 2004). Berelson explained it as “*a research technique for the objective, systematic, and quantitative description of the manifest content of communication (1952, p. 18).*” Through the analysis, author identified the theory-based articles and applications of theoretical frameworks to interior design.

In the first phase of the analysis, the author decided which academic journals to include in the research. The scientific journals that are peer-reviewed and solely focused on the interior design discipline are selected (**Table 1**). In total, four journals with a dedication to contributing to the knowledge of interior design are investigated: (1) “*The Journal of Interior Design*”—the oldest scientific journal in the field—and (2) another early established journal, “*IDEA*”, together with (3) the relatively new journal of “*Interiors: Design, Architecture, Culture*”, and (4) the youngest journal in the field, “*The Journal of Interior Design and Academy*”, are reviewed as credible sources of interior design discipline.

**Table 1:** Description of Reviewed Journals

<b>Journal name</b>	<b>Objective of the journal</b>
<p>“<i>Journal of Interior Design</i>” (Established in 1975)</p>	<p>“<i>The Journal of Interior Design is a scholarly, refereed publication dedicated to a pluralistic exploration of the interior environment. The Journal seeks to move the discipline forward by welcoming scholarly inquiry from diverse and interdisciplinary approaches...methods that actively explore and analyze the evolving definition of the interior (Journal of Interior Design, 2021).</i>”</p>
<p>“<i>Interior Design / Interior Architecture Educators Association (IDEA) Journal</i>” (Established in 1996)</p>	<p>“<i>The Interior Design / Interior Architecture Educators Association journal aims to foster, publish, and disseminate peer-reviewed research on interiors and interiority; to provide a valuable resource for the advancement of design practice and its associated theory, and further support the exploration of interiors and interiority in relation to historical and contemporary issues and events (IDEA, n.d.)</i>”</p>
<p>“<i>Interiors: Design, Architecture, Culture</i>” (Established in 2010)</p>	<p>“<i>Interiors: Design, Architecture, Culture brings together the best critical work on the analysis of all types of spaces... This journal will investigate the complexities of the interior environment’s orchestration and composition and its impact on the inhabitant from a trans-disciplinary perspective (Interiors, n.d.).</i>”</p>
<p>“<i>Journal of Interior Design and Academy</i>” (Established in 2021)</p>	<p>“<i>The main purpose of the Journal of Interior Design and Academy (INda) is to research and analyze the developing definition of interior design. At the same time, it aims to reveal the studies supported by interdisciplinary understanding and scientific methods, studies and critiques related to the educational problems encountered in academic understanding in the field of interior design and design with international originality (INda, n.d.)</i>”</p>

In the second part of the analysis, particular keywords (**Table 2**) are selected and used as a filtering mechanism for the inclusion and exclusion of the articles. Table 2 defines these keywords for the content analysis.

**Table 2:** Definitions of the Selected Keywords for the Content Analysis

<b>Selected keywords for content analysis</b>	<b>Definitions</b>
<b>Theory</b>	A system that sets relationships between the variables; explanation of particular phenomenon, factors and conditions (Abend, 2008); a set of interrelated propositions, systematic point of view (Imanda, 2014).
<b>Concept</b>	A way of thinking; components of thought contents that are intentional and representational (Burge, 1993); components of theory (Chinn and Kramer, 1999).
<b>Theoretical model</b>	Set of assumptions about particular system; inner structure or composition of a system (Achinstein, 1965); a synthesis (Liehr and Smith, 1999).
<b>Paradigm</b>	Embodied beliefs; a worldview which reflects assumptions about reality, ethics and epistemology (Mertens, 2012); a paradigm is adopted by a researcher in observing a specific issue (Liehr and Smith, 1999).

Based on these listed keywords: theory, concept, paradigm, and model, content analysis was applied to review which articles are theoretically based and include identification and/or application of theory to the discipline of interior design. During the decision phase of the inclusion or exclusion of articles, studies that contribute to the body of knowledge and have a theoretical foundation or are oriented by theoretical frameworks are included, while studies that vaguely identify a theory or only cite theory in the literature review with no theoretical orientation are excluded from the analysis process.

In the third phase of the analysis, theory-based articles are explored, involving the definition and application of each theory. During this phase, sub-categories/themes are developed by the author, and each article is assessed to understand how theory is applied to the field of interior design (**Table 3**). In total, 94 articles that were recently published between the years of 2021 and 2022 in the selected journals are assessed to define the application of theory to interior design.

**Table 3:** The Process of the Analysis Demonstrating the Flow of Taken Steps and Decisions

Steps	Protocol on taken decisions
<b>(1) Selection of academic journals</b>	<ul style="list-style-type: none"> <li>• Peer-reviewed</li> <li>• Scientific</li> <li>• Focused on interior design discipline</li> </ul> <p><i>* 4 journals are selected based on the above limitations (JID, IDEA, Interiors, INda)</i></p>
<b>(2) Decision on the level of analysis</b>	<ul style="list-style-type: none"> <li>• Determination of the keywords for content analysis</li> </ul> <p><i>* Theory, concept, model and paradigm are the selected keywords for the content analysis of the articles.</i></p>
<b>(3) Review of articles</b>	<ul style="list-style-type: none"> <li>• Filtration mechanism for inclusion and exclusion of articles based on the selected keywords.                             <ul style="list-style-type: none"> <li>○ Inclusion of theory-based articles</li> <li>○ Exclusion of articles that lack the definition and application of theory</li> </ul> </li> <li>• Further analysis on the (included) theory-based articles                             <ul style="list-style-type: none"> <li>○ Development of sub-themes</li> <li>○ Definitions on the application of theory to the discipline of interior design</li> </ul> </li> </ul>

#### 4. Findings

Based on the recent issues of the selected journals published in the years 2021–2022, 94 articles were analyzed in total (**Table 4**), and among them only 23 articles were identified as theory-based studies. Table 5 focuses on these 23 articles underpinned by theoretical frameworks and their sub-themes, categorized by the author. Sub-themes of the cited theories are listed and explained as follows:

- **Environment and behaviour** – experience models, perception, movement mapping, and types of stimuli are discussed to identify spatial ability and the creation of positive experience (Nehme, 2021; Suh & Cho, 2021; Khoudi, 2022);
- **Learning** – learning methods/models/pedagogies/ability test are provided for both interior architecture students and practitioners (Babacan & Kavut, 2022; Nubani, 2022; Turner, 2021; Cho & Suh, 2021);

- **Design-** varied theories are implemented to understand spatial organizations, provide design guidelines and new thinking about the interior space (Özdamar, 2022; Proietti & Gepshtein, 2021; Bollo, 2022; Abudayyeh, 2021; Aydintan, et. al., 2022; Yıldırım, 2022; Galford, 2021);

- **Creativity** - creative methodologies, research techniques and models to explore the interior space and its spatial experience (Cintio, 2021; Martin, 2021; Liebergesell, et al., 2021; Dinçer et. al. 2022);

- **Technology** – machine learning processes, the digital world, and eye-tracking technology as predictive models to determine interior behaviours (Loder, 2021; Khoudi, 2022; Mirkia, et. al., 2022);

- **Material Culture** – materiality, non-human agency, and the role of objects are analysed/conceptualized to derive meaning to the creation of interior (Ioannidou, 2021; Çetin, et al., 2022; Yan, 2021).

**Table 4:** Number of Articles and Applied Theories in the Reviewed Journals

Journal name	Number of articles	Number of applied theoretical frameworks
“Journal of Interior Design”	26	11
“Interiors: Design, Architecture, Culture”	23	7
“Journal of Interior Design and Academy”	20	3
“The Interior Design / Interior Architecture Educators Association Journal (IDEA)”	25	2
<b>Total</b>	<b>94</b>	<b>23</b>

In total, 22 different theoretical frameworks were found among those 23 theory-based articles, while total fixation theory is cited in two different studies (Khoudi, 2022; Mirkia et al., 2022). The examined theoretical frameworks are categorized by the author into six sub-themes: environment and behavior; learning; design; creativity; technology; and material culture. The category of “design (n=7)” had the most cited theoretical frameworks, followed by those belonging to “environment and behaviour (n=4)”, “creativity (n=4)”, and “learning (n=4)”, while “material culture (n=3)” and “technology (n=3)” are the least cited categories.

**Table 5:** Definition of Theories and Their Application to Interior Design

<b>Sub-Category</b>	<b>Theory/ Model/ Concept/ Paradigm</b>	<b>Definition of the theory/ model/ concept/paradigm</b>	<b>Application to interior design</b>
<b>Creativity</b>	Theory of archive	The archive theory by Derrida (1995) re-evaluates the archive in light of the transformations brought by technology and digital communications.	The archive is used as a creative methodology to explore the language of interiority and the juxtaposition of domestic and institutional interior (Cintio, 2021).
	Theory of assemblage	The theory of assemblage is used as a system to understand the interactions between the parts, arrangements, and constellations of objects (DeLanda, 2016).	The assembly collecting is implemented as a creative method within the practice (i.e., exhibition and museums) (Martin, 2021).
	LEBEN model	“ <i>LEBEN model (Lived Experience of the Built Environment)</i> ” examines first-person everyday experiences and affective interactions in habitual settings (Bader, 2015).	The model helps to build an understanding of the disability experience and acknowledges this special experience as creative input in the design process (Liebergesell, et al., 2021).
	Fantastic space	The word fantastic is described as unknowable, invisible, unreal, and related to the concept of otherness (Jackson, 2008).	The study illustrates the ways non-human agencies in design education expand the capacities of creative thinking with an emphasis on fantastic spaces (Dinçer et al., 2022).



<b>Material Culture</b>	System of Objects	Baudrillard (1996), Csikszentmihalyi & Rochberg-Halton (1981) explored the multifaceted relationship between objects and their owners intimate bond, acting beyond material bodies and transforming into things with meaning.	Objects, personal possessions, and their arrangement are used to reveal a scenography of interiority that carries the meaning of home within the domestic interior (Ioannidou, 2021).
	Theory of trans-culturation	The term transculturation is introduced as the <i>“merging of multiple cultures over the years, without a single dominant one (Ortiz, 1947).”</i>	Drawing on the “theory of transculturation” by Ortiz, interior atmosphere and its socio-spatial features were analyzed in terms of their materiality (Çetin, et al. 2022).
	The modern interior	The modern interior is <i>“a visual, material, and spatial reality, [and] perhaps even more importantly a widely represented and idealized entity (Sparke, 2010, 14).”</i> And, powerful ideology in interior design (Massey, 2013).	The modern interior is used as a lens to conceptualize “the material culture of home” with a focus on the girls’ creation of their room (Yan, 2021).
<b>Technology</b>	Concept of digital intimacy	The “concept of digital intimacy” deals with the new behaviors by “which intimacy is performed digitally”. (Loder, 2021).	The digital intimacy is investigated in the “contemporary experience of home”, together with the datafication of interior. Interior is accepted the as image-based -post-digital experience (Loder, 2021).
	Fixation pattern theory	“Fixation” is defined as <i>“the moment when the eyes are relatively stationary, taking in or encoding information (Poole &amp; Ball, 2006, p. 212)”</i> . Eye-tracking technology provides information on the eye activity of individuals and how long they are looking at targeted areas (Duc et.al., 2008).	It generates an understanding of people’s “visual attention to spatial elements” in environmental scenes and its possible connection with spatial and cognitive ability (Khoudi, 2022; Mirkia et al., 2022).

<b>Design</b>	The oblique function theory	The oblique function theory introduces wallless spatial systems, challenging the Euclidean partitioned spaces and allowing maximized use of space and fluidity (Virilio and Lotringer 2002, 88).	Oblique function theory is applied to understand the sensation and perception of inclined planes in interior settings (Özdamar, 2022).
	Plastic number theory	Plastic number theory is concerned with the proportions of three-dimensional objects and the human capability to differentiate size differences (Laan, 1977).	Plastic number theory is implemented to investigate architectural proportions by methods of sensory psychophysics (Proietti & Gepshtein, 2021).
	Ontological security framework	Ontological security is an individual's sense of continuity or a sense of order (Laing, 1960), and it is connected to the realm of dwelling (Dupuis & Thorns, 1998).	Spatial organizations together with the theoretical hallmarks of ontological security are investigated and supported by design decisions (Bollo, 2022).
	Screentterior paradigm	Screentterior is a new paradigm of spatial arrangement in the digital era, placing interiority within and without physical boundaries, propelling into the infinite localities (Mitchell, 2010; Weinthal, 2019).	The study generates a "new way of thinking" about interior space " <i>where screens are the new glass curtain wall (Abudayyeh, 2021).</i> "
	Concept of illusion	Optical illusions have a great power to change the visual perception of an interior space and can create effective results by conjoining the knowledge of design and perception (Jaglarz, 2011).	A theoretical framework is created to guide the designers on the role of lighting illusions in interior design (Aydıntan et. al., 2022)
	Pop-up concept	Pop-up is described as an element of surprise and can be interpreted as a spatial practice, being temporary and modular (Mervis, 2016).	The study explains the concept of pop-up space, its classifications, and its potential usage in altering contexts, i.e., pandemic space (Yıldırım, 2022).

	Correctional design	Correctional typology has evolved from punishment to rehabilitation, focusing on surveillance and control (Miron, 2011).	The study generates cues and directions for correctional design, emphasizing the connection between environmental stimuli and behavioral reaction (Galford, 2021).
<b>Learning</b>	Game-based learning	“Game based learning” is a method to integrate games and their fictional spaces into formal learning environments-allowing a specific problem to be addressed in a play context (Alaswad & Nadolyn, 2015)	Games with their fictional spaces are used as teaching materials for architecture and interior architecture students, allowing them to take spatial decisions and experience the space completely (Babacan & Kavut, 2022).
	Sense of community model	A “sense of community” is defined as <i>“a feeling that members have of belonging, a feeling that members matter to one another and to the group, and a shared faith that members’ needs will be met through their commitment to be together (McMillan &amp; Chavis, 1986, p. 9).”</i>	Model provides suggestions to increase “students’ sense of community in the online learning environment” of design studios (Nubani, 2022).
	Affective domain of learning framework	“Affect is typically related to emotional reaction in the absence of reason” includes social and emotional development through levels of valuing, etc. (Jackson, 2006).	“The affective domain of the learning framework” is investigated to runderstand critique practices in interior design studios (Turner, 2021).
	Spatial Ability Test (AISAT)	Spatial ability is a skill in generating, recalling, and transforming symbolic knowledge (Linn & Petersen, 1985); and <i>“the ability to visualize, manipulate, and interrelate real or imaginary configurations in space (Gaughran, 2002, p.3).”</i>	AISAT helps assess the spatial ability of the students and the “effect of their intervention on spatial design performance.” It expands knowledge on the spatial ability of design thinking and performance (Cho & Suh, 2021).

<b>Behaviour</b>	Spatial user experience model	“The spatial user experience model (SUE) framework” integrates UX phenomena and other varied dimensions to categorize the components on site that affect the perception and experience of users (Nehme, 2020).	SUE is used to assess the “affect of waiting room features on patient experience”. It provides insights to generate “positive experiences for patients and visitors” (Nehme, 2021).
	Theory of attentional bias	The theory of attentional bias discusses the human tendency to prioritize certain types of stimuli over others in any given moment (Roach et al. 2016).	The theory of attentional bias is enlarged to an environmental scale to understand the probable relationship with “spatial ability and creative performance in spatial design” (Suh & Cho, 2021).
	Productivity factor (PF) model	A mathematical model measures the stillness value of individuals by mapping the movement of users through room sensors. It derives a measurable productivity factor to assess the impact of design features (Khouidi, n.d.).	The productivity factor generated an understanding on the affect of seat orientations; zones, etc. to assess productivity through micro-movements of the uses (Khouidi, 2022).

Table 6 further illustrates the research design, research method, and research tools of these theory-based articles. It is found that the majority of the theoretically based studies are designed as qualitative research and primarily use the survey method to conduct their studies. The results illustrate that mixed research is profoundly conducted compared to creative research and quantitative research, whereas the case study method outweighed experiment, empirical research, and the grounded-theory method. Regarding the research tools, secondary data has the highest frequency, followed by observations and interviews within the limitations of this research.

**Table 6:** Theoretical Framework Frequency by Research Design, Research Method and Tools

<b>Research Types</b>		<b>No. of application</b>
<b>Research Design</b>	Qualitative	9
	Quantitative	3
	Mixed	6
	Creative practice	5
<b>Research Method</b>	Case study	3
	Survey	5
	Experiment	2
	Empirical	1
	Grounded theory	1
	Archival plan analysis	1
	Autobiographical research	1
<b>Research Tools</b>	Interviews	4
	Observations	5
	Questionnaires	3
	Documentation	1
	Secondary data	7
	Photogrammetry	1

As 23 out of 94 articles explicitly used theory, 31 articles referred to particular concepts but did not apply theoretical frameworks as the basis of their research. Table 7 indicates the stated concepts of these studies, such as the concept of home; adaptive re-use; sustainable design; the concept of space; interiority, etc. The studies that refer to these concepts are not included in Table 5, as the concepts were only referred in the literature sections and did not serve to guide or orient the research in general.

**Table 7:** Concept Citations in the Reviewed Journals

Concepts	Cited in journal:	No. of citation
The concept of home	Interiors	2
Housing typology	Interiors	2
Notion of room	Interiors	5
Dungeon	Interiors	1
The concept/sense of space	INda	4
Adaptive re-use	INda	2
Post-pandemic design	INda	2
Sustainable design	INda	1
Collective memory	INda	1
Perception	INda JID	3
Orientalism, Occidentalism	INda	1
Interiority	IDEA Interiors	5
Fantasy-oriented space	IDEA	2
Identity	JID	1
Oriental interiors	JID	1
Body ecology	JID	3
Virtual reality environments	JID	1

Therefore, the mentioned concepts (**Table 7**) were cited in isolation within the context of the articles, attributing a sandwich approach. This approach occurs when theory is “*cited at the beginning of an article and referenced at the end, but not necessarily used to guide the design of the identified study or to contribute to theory building for interior design*” (Clemons & Eckman, 2011, p. 38). Thus, articles published in the analysed journals were included if they incorporated the definitions, investigations, or implementations of a theory, paradigm, model, or concept.

The limited attempts to conduct theory-oriented research have always been a concern in the discipline of interior architecture (Guerin, 1991; Bosch

and Nanda 2011; Suyeon et al. 2016; Clemons and Eckman 2011). The majority of theories identified in Table 5 are adapted from other disciplines such as psychology, anthropology, pedagogy, and philosophy. In addition to that, one theory (the oblique function theory applied by Özdamar, 2022) belongs to the discipline of architecture, another theory (the plastic number theory implemented by Proietti & Gepshtein, 2021) is a combination of mathematics and arts, and the productivity factor theory (Khouđi, 2022) finds its roots in the field of economics.

## 5. Discussion

The extensive reviews of articles showed that the majority of theories are obtained from the fields of social science. For decades, scholars have discussed the body of knowledge for interior design and its fundamental quality of being interdisciplinary (Marshall-Baker, 2000). Hasell (1993) pointed out the contribution of other disciplines such as psychology, behavioral studies, architecture, sociology, history, etc. to the interior design discipline, and Kaukas (2001) stated the critical role of social science theories in proving an understanding on empirical and behavioral theories to interpret the interactions and interpretations of individuals within the space.

Even though theory-based studies were few in number in this research, applied theoretical frameworks highlighted the motivation of scholars to seek solutions to interior design problems in an interdisciplinary manner. And, the uncovered theories within the limitations of this study emphasized the knowledge base of interior design as being inherently multi-disciplinary.

The identified theories in the articles were commonly adapted from social sciences, and the varied topics reflected a range of theories, i.e., theory of assemblage, theory of fixation pattern, etc., illustrating the contribution of other disciplines to the academic body of the interior design discipline. It is not surprising to observe the dominance of social science theories, as Marshall-Baker (2000) explains the reason for interior design scholars to adapt theories from social sciences;

Interior design and social science both value research. The scientific method is used in each field to understand the human and environmental variables that affect health, development, and quality of life. This is critical to interior designers who rely on research to make informed decisions concerning the design of interior space (Marshall-Baker, 2000, p. 19).



The findings of the research underline the diversity of the body of literature for interior design borrowed from the related disciplines, yet the need to develop a theory uniquely to interior design still exists. Findings reveal that borrowed theories are applied to interior design but are mostly used to guide the research or propose a model to test the problem. Still, the analysis of the theoretical frameworks and conceptual definitions is promising for the future development of the body of knowledge. Especially the gap in the theory development specific to interior design can potentially be filled with the further development of the phenomenon of “interiority”<sup>1</sup> that favorably appears in the recent studies of the discipline (**Table 7**).

While interior design is an acceptably young discipline, explorations have matured compared to earlier ideas, and contemporary scholarship pushes the boundaries of the relationship between humans and interiors. The on-going fascination with interiority helps to build on new scholarship and explores the interior as not necessarily limited within the physical boundary; instead, it can be transient, urban, and interdisciplinary. Ranging from the lecture of Interiors and Interiority by Richard Sennett (2016) to varied publications such as “*Harvard Design Magazine Inside Scoop (2023)*”, volumes of the “*Interior Architecture Theory Reader (Marinic, 2018)*”, and “*Interiority: A Critical Theory of Domestic Architecture (Hvejsel, 2011)*”, as well as articles like “*Interiority as the Conditions of Interior (Pimlott, 2018)*”; “*Urban Interiors: A Retroactive Investigation (Leveratto, 2019)*”, and “*Thinking Beyond Dualities in Public Space (Poot et al. 2019)*” illustrated the porous nature of interior. On top of all, within the limitations of this research, interiority is explored as conceptual thinking such as “curated interior” that transforms the domestic and institutional interiors (Cintio, 2021); the “scenography of the interiority” (Ioannidou, 2021); the “screentierior paradigm” of the virtual public interiors (Abudayyeh, 2021); and etc.

Within the parameters of this study, regardless of the limited number of theory-based studies and the infancy of the established theories in interior design, contemporary research is promising for the future of the discipline. Yet, it is clear that further theoretical developments are required to advance the interior design discipline.

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<sup>1</sup> McCarthy refers to interiority as a “transformative concept, dependent on social, cultural, physical, and technological developments in our own specific societies (2005, p. 122)” and defines interiority as a spatial condition, wrapping space with blurred boundaries.

## 6. Conclusion

In this research, the aim was to review the application of theory in the scholarly research of interior design and to indicate theory building specific to the discipline. Based on the systematic analysis of the selected journals, findings revealed that varied theories are adapted from other disciplines, creating a rich interdisciplinary knowledge base for interior design. Drawing theories from a wide array of disciplines illustrated the lack of established theories unique to interior design. Having enriched yet deficit of center-intrinsic literature exemplifies the importance of embracing the marginality of the interior to break away from the other disciplines. Therefore, the creative endeavors of researchers and the utilization of specialized theories are needed to enhance the promising future of the discipline.

Still, it should be noted that this research has numerous limitations. The findings are intentionally limited to articles published in four journals with a reputation for and contribution to the field of interior design. Only peer-reviewed or refereed articles are included in the analysis. Plus, in correlation with the objective of the research, theory-based research articles are explored to understand the use and application of theories, and articles that can be categorized as non-theoretical are also excluded from the general discussion of the research. Other design and multi-disciplinary journals, books, or any other forms of scholarly publication that contribute to knowledge of interior design and its theories are not part of this review. Therefore, the author makes no claim that the list of theories generated covers all interior design theories in the literature. Future research on the exploration of the theory-based research in interior design can include other forms of academic publications to evaluate the progression of the discipline's body of knowledge.

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## CHAPTER VIII

# ENVIRONMENTAL PERCEPTION IN FLOATING INTERIORS

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### 1. INTRODUCTION

**D**esigns made without feeling the spirit of the spaces remain low in terms of user satisfaction. Human is a being that consists of body and soul and has physical and psychological needs. At this point, space can be explained not only by its physical structure, but also by its perceptual factors and its effects on human spatial behavior. When it comes to the user's feelings and behaviors in the space, questions arise about how the space is perceived, what the desired spatial effect can be, or what kind of effects can positively affect people. When building space, an architectural creation that develops based on user needs, spatial components have integrated effects. Designs made without feeling the spirit of the spaces remain low in terms of user satisfaction. Although there have been many structural and descriptive changes related to space in the process from its inception to the present, it is clear that the effort to create environments that will give meaning to the space and perform the user's actions in the most efficient way has not changed. The user desires spaces in which he or she will feel comfortable while carrying out his or her actions.

Space is viewed as an environment that encompasses the relationships necessary for appropriate human-environment interaction, the tools needed to support those relationships, and the boundaries. Norberg-Schulz emphasizes the clarity of the boundaries by describing the interior space as the closed, private, and semi-private open spaces while primarily describing the exterior as the urban/social space. According to Schulz, the exterior fosters a sense of openness while the interior fosters a sense of closure (Schulz, 1972). The

components, elements, and reinforcements that make up the space can also be classified as static or dynamic depending on whether they are fixed or not. The user of the space gives meaning to the space she is in by identifying herself with her perceptions, her environment with her goals and at the same time adapting herself to the conditions provided by the environment. The space that surrounds us and the elements that make up the space determine our walking distances, our temperature, what we can see from what angle, what we can hear and with whom we can communicate. Space, whether inside or outside, is a living thing that interacts with its user, gains meaning from it, and can change as a result. The place we live in affects our mood, our approach to actions and people more than we think. Therefore, our expectations from the place are quite high. It becomes apparent that the space is not only a volume that satisfies physical needs, but also the need to take into account the perception of space and the various definitions of space, when there is a need for a place where we can feel good while carrying out our actions.

## **2. THE HISTORICAL PROCESS OF INTERIOR SPACE AND ENVIRONMENT RELATIONSHIP**

The word “environment” refers to everything that surrounds or is around us. In this sense, the environment is made up of everything that, despite being unrelated to us, has some impact on our way of life or our activities. It consists of all the circumstances and influences in play at the time an event takes place. It alludes to the external factors, circumstances, or impulses that have an impact on the environment. The first image that comes to mind when discussing interior design is an interior-defined space, but the surrounding environment has a significant guiding influence on the design. The major source of inspiration for the evolution of styles and building methods in the field of space creation has been data from the external world. Indoor spaces with different environmental conditions cannot be evaluated under the same design conditions. Interior design is a form of living organization that most directly affects people’s daily existence (Altman, 1973). It aims to make it possible for living things to function as effectively as possible while confined within a closed or semi-enclosed volume. An area is something that has walls formed by the boundaries between the interior and outside, or whose boundaries are specified between the interior and exterior. Whether natural or man-made, the outside world has its own variables. The relationship between external and internal concepts has long been a topic of discussion among notable figures in the fields of science, art, and

philosophy. We have been exposed to the ideas of the inner World and the outer world we were born with since the mother's womb. Later, discussions about what is inside and what is outside of us were sparked by our connections to the various layers of this outer World. Many relational interpretations and modes of thought have been developed about the relationship between the external and internal, subject and object, and existing/existing environment, and many attempts have been made to define the external world. Descartes talked about the need to reveal certain truths about the External World and its existence. He discussed having a precise understanding of the terrestrial environment as well as the relationships between the subject and the object. It enables the person to be certain of this correctness. The Nature-Space Relationship was discussed in the context of the Human-Nature-Space trio by Norberg-Schulz, who seeks to provide alternatives to contemporary urban spaces where the perception is superficial and cut off from nature. The idea of place was created when people realized they could incorporate elements of their natural surroundings into their built settings, reflecting those elements in a way that suggested their settlements had a soul. He mentions that he makes sense of belonging with the interaction of natural and built environments, and as a result, the deep background of the architectural space.



**Photograph 1.** Historical living in water village Kampung Ayer [http://3.bp.blogspot.com/\\_BHQXYbtdBiE/SLXZbQvy\\_wI/AAAAAAAAABM4/kekQoAT1x0E/w1200-h630-p-k-no nu/gambar\\_kampong\\_ayer\\_1950s.jpg](http://3.bp.blogspot.com/_BHQXYbtdBiE/SLXZbQvy_wI/AAAAAAAAABM4/kekQoAT1x0E/w1200-h630-p-k-no nu/gambar_kampong_ayer_1950s.jpg)

The main element of good space designs is establishing interactions with their constructed and natural contexts. Norberg-Schulz links the idea of *genius loci*, which he first studied in nature, to structures made with “spirit” inspiration from the surrounding natural environments. Heidegger argues that because people express their being in the world through the ground around them, the outside actually defines and surrounds the inside. Since the middle of the 20th century, it has been noted that the relationship between nature, humans, and structures has been disrupted, the natural environment has been calmed, and the architectural fictions created by people with their own rules have been met with the negative reactions of the environment and the depthless buildings. However, as a natural environment with a very strong character, it is not so easy to pacify marine environments. With its strong character, Sea obliges the user to abide by its own rules out there. The concept of exterior in the marine environment, which has not been widely discussed until now, will be discussed instead of a conventional terrestrial exterior environment, as the interaction between exterior and interior strongly influences the perception of space in interior architecture and the success of the design.

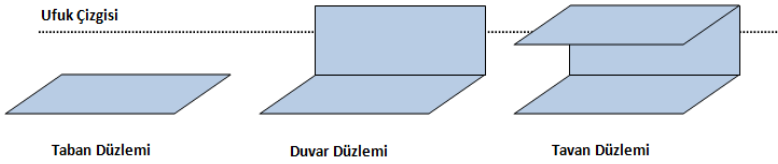
These environmental variables, which continue in architecture and interior architecture, generally belong to the earth, where the spaces in terrestrial and fixed environments are located. Physical environmental control consists of assumptions on the formation of a space with fixed geographical directions. A fixed space consists of the resolution of an indoor organization in which sunrise, sunset, wind directions and landscape do not change. Throughout the ages, human beings have preferred to build in places close to the resources where they can sustain their lives. Although these areas are mostly continental areas, it has been seen that water surfaces are preferred as living spaces in some cultures. Since the comfort conditions were not regarded as being particularly satisfactory environments in the historical process, floating habitats have not been widely used. However, with the serious development of climate change, population density, and the reduction of terrestrial resources and areas, floating habitats have emerged as alternative living spaces. With the increasing number of users, life at sea has begun to be seen as an option for people to maintain both a holiday and a permanent life. Hence, in terms of space design, a new notion of the external that is surrounded by the water has arisen (Yıldırım & Kudumovic, 2021). The perception and design principles of the building and interior space on a moving sea necessitated a revision of the teachings based on the land structure design criteria based on a fixed basis. In this case, the relationship between interior and exterior and the design criteria should be evaluated according to the

characteristics of the sea. Modern architecture attempts to produce a physical environment that is appropriate for the contexts in which people live in addition to building a structure that serves the intended purpose. “The active physical environment that surrounds and affects the person, that is, the person in which he lives,” is the definition of the physical environment used here.

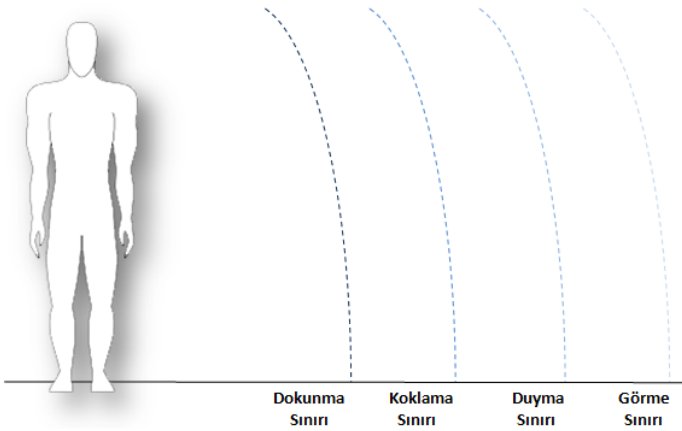
### *2.1. Space Perception*

Spatial perception enters the picture once it is defined by the senses, beyond the three dimensions that make up the objective existence of the space. Literally, perception is the process of gathering data from the environment. People’s sense of space is the key to their survival in space. In order to understand the relationship with the space, first of all, it is necessary to explain how the space is perceived. It is the process of making choices and decisions based on ongoing awareness, knowledge, and evaluation of the space, as well as on the use of sense organs to feel and understand the environment and recognize its attributes (Rapoport, 1997). Even though sight plays a significant role in perception, other senses like smell, hearing, and temperature are also used. Despite initial neglect of spatial perception and emphasis on perception originating from the sense of sight, perception is actually influenced to varying degrees by all senses. It should be remembered that perception is a synthesis of different senses, and that all senses have an impact on how we perceive space (Lawson, 2001). Perception in space, which consists of a holistic combination of spatial elements, can take different forms. The perception of space appears when visual environmental factors are taken into consideration within the context of a three-dimensional spatial arrangement. The significance of spatial perception is established by how orientation, wayfinding, location discrimination, and identification are understood and designed in relation to the distinctions in horizontal and vertical perception. Additionally, with a solid understanding of the human perception mechanism, it is possible to comprehend the formal and symbolic aesthetic features such as covering, closure, transparency, creating variable vistas, spatial richness and fluency, light/shadow plays, and reinforcing their organization in the arrangements made with the surface-motion relations that have existed since the Baroque period (Gur, 1996). In the perception of space, besides the physical factors, our senses also play a role in perceiving the space. In addition to the physical, concrete and defined components that make up the space, there are also abstract components that are perceived by our senses and have a psycho-social dimension. Space consists of components measured by quantity and quality.

It is this abstract value that gives the space its originality. The physical and perceptual parts of the environment are explained separately, yet when it comes to perception, the place is treated according to its holistic design. Although human beings are in a physiological and psychological structure, and these two concepts have definitions, they cannot be viewed independently of one another at the level of perception and meaning, just as buildings consist of physical and psychological contents. “In the process of perception, internal and external factors—the psychological processes that shape how our senses function in response to stimuli in our environment—interact to produce the final result. We perceive things differently depending on the social circumstances and context in which they occur. (Gifford, 2007)



**Figure 1.** Planes defining the space (Ashihara, 1981).

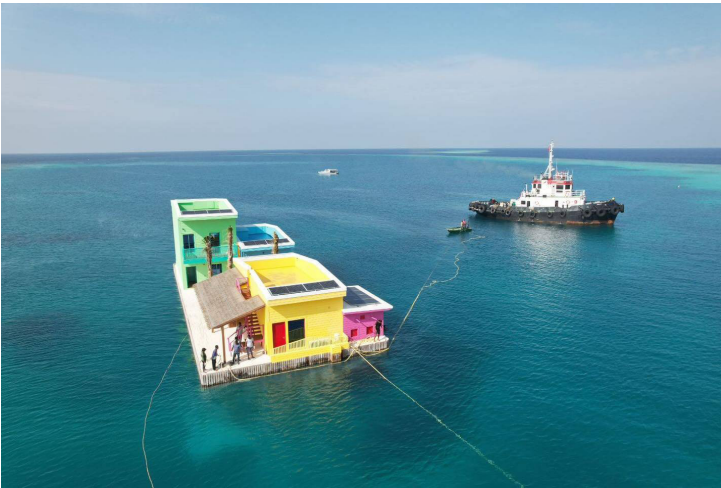


**Figure 2.** Sequence of sensory areas in the perception of space

### 3. PERCEPTION OF FLOATING SPACE

The future of many nations, particularly island states in the Western Pacific, is threatened by changing climatic factors and rising sea levels brought on by global warming, which forces them to look for new water-related solutions. As a result of factors like declining terrestrial habitat and resources brought on by rising population density and the ensuing air pollution, as well as shifting

spatial preferences in urban life as a result of the global money supply's search for new investments, designers and scientists have turned to alternative living arrangements. Water surfaces are one of these habitats. In actuality, man and water have always had a close relationship. One of the earliest examples of living on the water's surface is the Makoko Fishing Village in Nigeria, which has existed since the 18th century even though it does not fit the description of a floating habitat. It is made up of spatial groups whose bases are anchored to the land on this water's surface, which is home to about 100,000 people. The use of small boats creates horizontal connections. Additionally, we can see that water surfaces have been considered as an alternative living space over time in the Venus utopias of Jacques Fresco, who imagines a future in the oceans, and Buckminster Fuller, *Triton*, 1960. In his book *Nature of Voyaging*, written in 1997, Robert Faulke—another figure who made predictions concurrently—stated that the three entities—humans, space, and the sea—are becoming more and more visible together and will continue to do so. The three examples given here, however, do not depict floating structures but rather spatial groups that are fixed to the water's surface. The space may, however, be a “FLOATING SPACE” if the spatial patterns on the water's surface could move or if a relocation was a possibility (Yıldırım & Zengel, 2016).



**Photograph 1.** Floating House. <https://www.waterstudio.nl/projects/maldives-floating-city-first-island/>

Floating spaces are spatial patterns that are in motion on the water surface or that can make arbitrary displacement. The landscape typically moves slowly beneath the boat because of the low speed and the opportunity to see the



natural images. This occurrence is perceived as a natural occurrence, similar to how the air becomes darker. Because there aren't the same action patterns and required travel modalities that constitute home actions in a city in such a space. Therefore, the quality of the road, accommodations, and travel are not significantly impacted by the acceleration and deceleration movements. The time spent in the floating environment has an internalized quality as well. There is no state of travel in this internalized continuum.

### *3.1. The Effects of Sea on Spatial Perception*

The movements of the sea have an important place in the perception of the space. While the moving sea creates dynamism in the space, it provides instantaneous different images to be perceived by people. With its reflective quality and reflection, a still sea alters both the perception of space and its size. In addition to these, by reflecting the shifting hues of the sky, it adds a new dimension to the relationship between space and the sky. As a result, climate and weather are not only physical stimuli but also influence the atmosphere of space. The change in its own color brings out different sea features in addition to the colors it reflects. When it is still and has a dark surface, for instance, it produces a reflection effect; when it is light colored, it produces a showcase effect. On the other hand, a dark colored sea produces a textured/rough surface effect when it is moving. If it is light, this color also conjures up a sense of vitality and movement in addition to its fluctuation (Harris and Dines, 1998)



**Photograph 2.** Floating House. <https://www.waterstudio.nl/projects/maldives-floating-city-first-island/>



External stimuli (light, sound waves, etc.) are perceived through the sense organs and these stimuli are transferred to the brain together with the previously experienced information in the memory via the nervous system; Thus, the person adapts to the form of the environment. The volume dimension refers to a space for a person at various phases of life, and it also has an impact on one's state of mind and ability to make decisions while at sea. Perception at sea is not technically equivalent to the image produced when perceiving the normal world. For instance, if the relationship between a speedboat race that is actually taking place and the copy that is being photographed or filmed is taken as a visual experience, the real features of the speedboats are also perceived in these representations, even though one of them is unquestionably a representation. This problem is known as the Regardless of the distances, colors, and illumination levels of the objects; without the observer's relative position and movements; its spatial location, orientation, and size look as they truly are. constancy/ immutability phenomenon in perception research. However, the drawback of the development of the visual image produced by the constancy/immortality phenomenon is that it produces illusion and inconsistency in extreme conditions, particularly in sea conditions. (Standler, 1941).



**Photograph 3.** Livable Yacht. <https://www.waterstudio.nl/projects/livable-yachts/>

According to the principles of perception, regardless of culture or environmental factors, people interpret certain stimuli in the same ways. On the

other hand, at sea, in a strange and unpredictable environment, our sense organs must function fully and efficiently in order to make a proper judgment and take the appropriate action in tandem with it. For instance, it is a complicated problem how we can orient ourselves on a horizontal plane in a floating space without a compass. In the sea, “geographic orientation” is different from what is understood and learned on land. Three actions are typically necessary to achieve geographic orientation at sea:

1. Maintaining a predefined itinerary
2. Finding a specific destination
3. Orienting ourselves in a certain area with our spatial perceptions

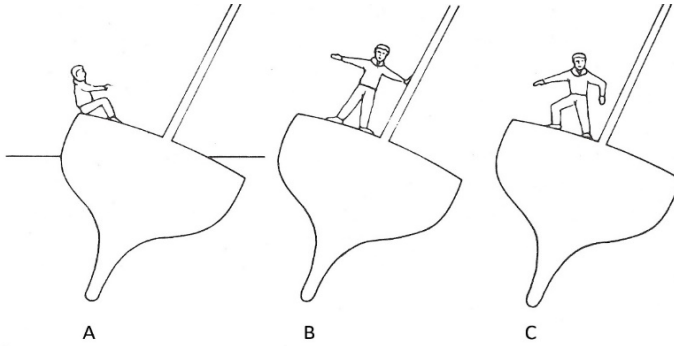
In addition to these, there are secondary elements that influence the activities, status, and behavior of geographical orientation at sea. For example, dry mouth, headache, exhaustion, need for fresh air, sensitivity to smell, apathy, lack of motivation, spatial disorientation, excitement, and depression are factors generated by floating spaces and play an active role in detecting it (Standler, 1941). In addition to these, there are secondary elements that influence the activities, status, and behavior of geographical orientation at sea. For example, dry mouth, headache, exhaustion, need for fresh air, sensitivity to smell, apathy, lack of motivation, spatial disorientation, excitement, and depression are factors generated by floating spaces and play an active role in detecting it (Standler, 1941).



**Photograph 4.** Float-in / Drive-in Floating House: Two residences that are connected by two plateaus in the middle. One platform can be used to park vehicles. A huge terrace makes up the second plateau. The house is 140m<sup>2</sup> in size and is divided into two storeys. You can travel down half a level to the sleeping space and up half a level to the living area from the entryway. <https://www.waterstudio.nl/projects/drive-in-float-in/>

### *3.2. The Effect of the Sea on the Vertical Perception of the Space*

The perception of balance is the result of the human physiological system's ability to distinguish between gravity and additional acceleration forces (via motion). The perception of balance is what causes boats to have constant positive and negative accelerations in all dimensional directions. There is a force called plumb in floating spaces that we perceive as downward and whose direction is constantly changing. The direction of gravity created by the sense of balance (which changes with the movement of the space) differs from the fixed horizon line formed visually. The symptoms of this unconscious sensory disturbance cause seasickness. Vertical perception emerges with the control of information by three different sensory systems, which are the visual system, the sense of orientation, and the sense of balance, as entities walking and standing on the vertical axis (Fig. X). (Standler, 1941). According to the theory outlined, vague, dubious, or ambivalent perceptions of the gravity level arise when excitation modes conflict. They are caused by the lack of activation of a visual proprioceptive invariant. With unstable perception typically comes an imbalanced position, that is, some degree of imbalance. It is critical to investigate this state, but it is much more critical to comprehend the baseline stimulus state of co-varying modes. The reciprocity of vision and proprioception in everyday spatial action may hold the key to solving not just the problem of visual perpendicularity, but also the problem of geographic direction. Therefore, while the conflicting instance of vertical references is significant, it does not represent spatial behavior on its own. Balance and orientation in an airplane or floating environment, as well as other forms of complicated spatial activity mediated by instruments, will almost certainly include some conflict or contradiction. The solution is to learn to rely on dependable clues while ignoring untrustworthy and irrelevant ones. Yet, at sea, in three dimensions (pitch, roll, heading), on the deck with continuous acceleration (speed) and deceleration, the sense systems distinguish it from gravity because the acceleration induced by the floating space's movement is vectorial (Figure Y) (Standler, 1941).



**Figure X.** Vertical perception: A) visually B) with sense of balance C) with sense of position

Visual systems react to vertical lines sensibly under land conditions (trees, walls of houses, etc.). Sensitivity refers to our ability to instantly recognize even slight deviations, as well as our faster perception of vertical lines. A trapezoidal hung frame, for instance, can be identified by looking at its vertical components. Only masts and buoys are able to provide visual information about the vertical in the sea. The entire surface of the sea is horizontal. However, accounting for wind and water motion almost results in a departure from verticality. The user's visual orientation in such a space is aided by the horizon line, an almost universal horizontal line. The horizon line significantly influences how the variables in the perceptual space are interpreted (Dallinga, 1995). One learns to ignore the conflicting information produced by the horizon line and the moving space visible outside the window when the body is standing vertically and keeps his balance. It is necessary to achieve the phenomenon of comfortable sea spaces in order to comprehend how the sea affects the body and how the body perceives space.

### ***3.3. The Effect of the Sea on Depth Perception in Space***

The relationships between visible objects are to be given meaning through depth perception. At both a physical and psychological level, the idea of depth is crucial to how humans perceive the world. In a space, the lack of a reference point results in shortened visibility; because the eye can only focus on objects at a very close distance and can perceive them only by means of a reference. The ability to comprehend the depth, distance, and size of the object becomes challenging or lost in the absence of a reference point in the environment. For the brain to perceive depth, there may not even need to be a physical space. In order to create the illusion of depth on flat and realistic surfaces, painters

and architects have worked to realize this sense of depth. With illusions, the concepts of openness and width of the depth perception of reality have been closed. The use of mirrors and pictures in spaceship interiors has been advised by psychologists as a means of addressing this issue and ensuring that the physical and psychological needs of those occupying the space are met (Yıldırım, 2016). Because the background is surrounded by water in some floating spaces, there might not always be a reference point. In order to strengthen the perception of depth in floating spaces where the visual references taken from the outside are minimized, it may be necessary to create negative or positive depth perceptions as well as illusions aimed at softening the linear spatial proportions of short and narrow spaces or long and dim corridors.

### *3.4. The Effect of Island Syndrome on the Perception of Interior Space*

The sea is complex, dense, and has many faces. It also moves. The traits of the waves that make it up are what cause its diversity. The fact that the sea's activity is similar does not preclude its having different sizes. The wind from outside always changes the direction and speed of the sea, which is never still. The emotion understood to man as crowd/dominance is present in the intensity of the waves. Although the sea exists independently and in stark contrast to everything else, it yet necessitates submission to others. It is possible to construct compatible structures that move with water instead of being fixed against it and are hence impervious to its force. This balance cannot be broken; although the water cannot explain itself, it does. The sea contains more than just waves; there are also individual drops of water. They become feeble when they are cut off from one another due to their shrinking or singularity, however it is important to remember that individual drops are a component of a larger whole. A distinct, varying, but constant sound is also audible coming from the sea. The sea is awake constantly, whether it is day or night, and over many years or centuries. Its strength and fury allude to another thing that possesses all these qualities: crowd/dominance. The sea, however, also possesses the steadiness that the crowd lacks because it is constant and never gets smaller or disappears. It surrounds everything and doesn't change; we constantly have the impression that it's the same sea.



**Photograph 5.** Livable Yacht. <https://www.waterstudio.nl/projects/livable-yachts/>

In the vastness its size adds, there is a sense of dominance; to dominate, it draws ever-more-people. On the other hand, the ocean is a sign of the splendor of the sea. The ocean is a universal force that permeates all space and all land. Its deepest and most insatiable image is that of dominance. Sea's emotions are erratic; they can be soothing, threatening, or released by the wind. But it is always present, and one is aware of its location. It is evidently present and expresses itself; it does not suddenly appear as if it had never been there before. But due to its abruptness, it still retains some mystery. The sea is not geographically constrained and is not split into people or places. No one is left out because there is only one universal language. It is thorough enough to address any well-known crowd. Yet, it represents mankind as the source of all life and the container of all lives (Canetti, 1984). The perceptual space is impacted by the fact that the water serves as the exterior landscape of the floating area. Human vision is directed to "single space" by the backdrop image in the floating space. A direct connection is established between the perceptual dimension produced by the internal spaces on the sea and the visual communication of man with still or moving images in nature (Yıldırım, 2016).

#### 4. RESULTS

The 21st century will be marked by the reflections of profound changes in the social, cultural, and technological spheres. The new values of the solutions developed and the degree to which they respond to new lifestyles have started to be discussed when looking at the changing contexts from the perspective of architecture. With increased interdisciplinary collaboration and the chance to



experiment with applying the techniques used in architecture by other disciplines, it is anticipated that designs appropriate for today's user lifestyle will emerge. By learning from the information about the space that defines the user, it is possible to reduce the number of bad decisions and increase the number of good ones early on, improving the effectiveness of the finished product. Additionally, a problem in a space not only affects the user, but also the authors of that project because of incorrect designs, repeated productions, or energy loss. This harms the environment by wasting labor, time, and natural resources.

As a result, the idea of "floating architecture" is one that is relatively new to both the world and the United States. Numerous studies have demonstrated how, under normal circumstances, the physical environment, including types of terrestrial structures with various functions and traditional formations, affects human behavior and health (Shaaban & Yildirim, 2019). Studies on how people interact with the environment on water, which is thought to be one of the future's alternative living spaces, are still in their infancy. Floating interior spaces are viewed as marine structures on the water in this study's architectural analysis. It is also mentioned that the psychological state of seafarers differs from that of people in terrestrial spaces in terms of their perception of the sea. It has been observed that the idea of a constantly changing direction in a floating dynamic structure increases the importance of design choices in interior spaces, in contrast to terrestrial structures where the directions are stable in the placement of functional units. As can be seen, these dynamic spaces need to be examined independently of more typical building types. It is a statement that the floating space cannot be assessed solely in terms of physical scales and that the architect serves as an interpreter of human behavior by translating it into physical space. The provision of a satisfactory space demonstrates the success of getting to know the user and defining the expectations from the space by constructing the interior elements that create the atmospheric qualities in the space. Additionally, it should be noted that on a dynamic surface, uncontrollable environmental forces might be present for boat spaces. Making the right spatial decisions at the outset can help minimize issues like seasickness and will also have a positive impact on how comfortable it is at sea.

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## CHAPTER IX

# PERSONAL SPACE PROTECTION TACTICS AGAINST SPATIAL CONTROL STRATEGIES: TERRITORIALITY

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### 1. INTRODUCTION

As the urban population increases, ‘congestion’ in urban space is one of the important challenges of the 21st century. The concentration of the population in cities with the industrial revolution has led to a shrinking of territory. Territory is defined as the boundary between the human body and the external environment. However, territory in the urban setting may be described as the magnification of the scale based on the human body to transform it into a personal space.

In the transition from territory to personal space, the border is an important concept in terms of determining the dominance areas. The rules set out by disciplines such as law, economics and sociology not only determine the users’ dominance areas in the space, but also define the territories where interventions are permitted. In this respect, this study discusses the boundaries of personal space in the city, and ‘territoriality’, an important problem faced in 21st century cities, was selected as the subject of research.

The positivist approach proposes normative practices to solve the population-related problems in the 21st century cities. These practices are described as equitable, inclusive and unifying, and promise to ensure social justice in space while looking out for the ‘common good’. This suggests that there is an injustice in the space.

The concept of social justice in space highlights the ‘injustice’ that constitutes a disadvantage in respect of fundamental rights. The social justice

which may be directly associated with housing, one of the fundamental rights, also includes negative concepts such as discrimination, economic inequality and poverty. Although these negative concepts are usually linked to the problems of social actors regarded as non-normative, they concern the whole society. In this regard, it may be argued that social justice in the urban space is tried to be solved by the rules set by the authorities. However, it can hardly be claimed that the solutions to problems in the urban space are permanent.

Therefore, pressure elements are used to restore the disrupted order in the urban space. It is observed that these elements force especially non-normative actors to obey legal, economic and social rules in urban space. From this perspective, the main argument of the research is that although the rules to be obeyed for all social actors who are users of urban space are defined according to strategic thinking, certain spatial boundaries are exceeded by the users with different tactics. The tactics developed against the strategy adopted by the authority to maintain order in urban space are adopted by normative social actors as well as non-normative actors.

The coercion of the public by the political power and local authorities through various practices in the urban space leads to the development of behaviors violating the rules. In this respect, it can be argued that practices constituting an element of pressure cause social resistance. On the other hand, it cannot be stated that social resistance always emerges with violence. It is presumed that different forms of resistance are developed in urban space for the rulers and the ruled. Therefore, it can be assumed that regionalism is a non-violent and passive method of resistance. Based on this assumption, the research aims to examine the territoriality practices of different social actors through architectural examples in urban-public space.

For this purpose, the hypothesis of the research was defined as ‘tactics developed for territoriality, a form of passive resistance in public space, formally affect strategically designed public space in cities’. This hypothesis, which is based on the assumption that although the space is designed by the designer, it is changed by the user, questions the limits of the change realized by user intervention in public space. This research explores the users’ understanding of personal-public space in physical space and uses concrete examples to examine the concepts.

The research is important because it investigates a topic that has been previously discussed by different disciplines in the context of sociological characteristics in the field of architecture, planning and design. It is also

explanatory as it re-discusses previously explained concepts from the perspectives of different disciplines.

Since territoriality is a very broad and comprehensive concept, the scope of this explanatory research was limited to control and territoriality in public space for ease of study. This limitation is based on certain criteria for the classification of the examples in terms of public space designs.

The criteria were evaluated primarily on the basis of non-normative or disadvantaged groups that are considered to be subjected to social injustice. In addition, the reasons for the inclusion of individuals in non-normative or disadvantaged groups in these groups were also considered to define the scope. Then, the spatial tactics that normative users adopt despite not being subjected to social injustice were investigated within the concept of territoriality. Thus, the approaches of actors who are users of space in the social structure to the issue of territoriality were examined.

'Territoriality' is not a new concept. However, there are differences in the definitions of the concept in different disciplines. For this reason, firstly Turkish literature was reviewed and then research was conducted using foreign literature. Since the main fields of architecture, planning and design have a very wide research universe, the subject was investigated in terms of physical architectural space and public space. Interior and semi-public spaces as well as non-designed spaces were excluded. In addition, examples that completely violate legal practices were also excluded. The study examined designs for public and/or personal benefit, implemented on the initiative of the user in case of need.

The historical peninsula of Istanbul covering a very large territory was selected as the research area. The historical peninsula completely overlaps with the borders of Fatih district, and lies within the borders of Eyüp, Bayrampaşa and Zeytinburnu districts. For the field study in the research, in order to examine the public spaces in terms of the ability of the sample to represent the universe, the units constituting the sample were selected from the public spaces in Eminönü, Sultanahmet, Sirkeci, Beyazıt, Laleli districts where users are dense. In this regard, it can be stated that the units in the sample represent the universe. The sample was composed of visuals obtained through observation and documentation of architectural practices in public spaces selected within the borders of the district. Care was taken to select the visuals in line with the purpose. The findings were analyzed by visual content analysis method. The content analysis method used in selecting the units to be included in the sample is based on the phenomenon of 'visual perception or comprehension'. Therefore,

for the analysis, visual data were documented through on-site observation and photography on the route determined within the scope and findings were collected.

This study examines social justice approaches in Turkey and the world. In order to review the current status of research in the field of public space design, the general survey model was used from the quantitative research methods. Preferred for the purpose of determining the trends in the research universe of the explanatory study, the general survey model was chosen in order to make a generalizable judgment in the systematic review. For the content analysis, however, Kärholm's model based on differences and territorial control was used. Kärholm's model was preferred as it provides a conceptual framework of four modes of territorial production for the investigation of the relationship between architectural form and function.

The research employed a two-stage methodology. In the first stage, the keywords of 'spatial justice, territoriality, spatial resistance, public space and architectural design' were searched in the thesis database of the Council of Higher Education (YOK), the academic database of the DergiPark, the Google Scholar Turkish database and the library catalogs of universities with architecture/planning and design departments. The studies conducted until March 2023 formed the conceptual infrastructure of the research. The studies constituting the sample set were sorted by year, subject, method, specialty and countries/cities and subjected to content analysis. Thus, the theoretical infrastructure of the study was completed. In the second stage, current architectural practices were documented. Visual data were evaluated through visual content analysis.

In addition to the observed research area, Turkish and English keywords were used in various visual search engines on the internet to access studies and architectural practices on the subject, and the data obtained were sorted by year, subject, method, specialty, organization, country and practice, and subjected to content analysis. In line with the findings, space designs with territoriality have been classified according to their forms.

## 2. KEY DEFINITIONS AND CONCEPTS

The main argument of the research is that the boundaries defined to ensure social order in urban space are transgressed by users through different spatial tactics. Hence, it can be argued that urban space can also be defined as a space where people struggle against authority in order to overcome the rules. In this case, the city can also be described as a space of conflict with a Marxist approach.

As an economic-based approach, Marxism argues that the city is shaped according to whoever is powerful the conflict. David C. Thorns criticized this by saying: “This emphasis on stability ensures that order is the dominant motif in urban theories. The shortcoming of these systems of thought is that they ignore the powerful social actors who consciously shape the city in their own interests” (Thorns, 2004, s. 24). This shows that urban space does not emerge spontaneously, but also proves that there is no equality among the guiding elements in the management of the process. The definition of what is considered equal by the central government and local authorities brings along the opposite concept of ‘inequality’ leading to social segregation.

It is the physical environment that makes inequalities in urban space visible. According to neo-Marxists such as David Harvey (Harvey D. , 1973, s. 61-62) and Manuel Castells (Castells, 1983, s. 115-121) criticizing urban spaces, which are organized-designed environments, for being unequal, the formal geometries of physical architectural space are a function of the spatial preferences of those holding economic power. Those who determine urban norms are those who hold the economic power. In this respect, it is a known fact that non-normative actors are forced to follow legal, economic and social rules in the urban space. This implies that the practices characterized as equitable, inclusive and unifying do not look out for the ‘common good’. However, this idea, created by the historical materialist tradition, shows that the dominant mode of production and those subject to it have developed unique and flexible forms of coexistence in order to maintain unity in the urban space.

The resistance of those who are not seen as equals against those who are seen as equals in order to utilize basic rights can be associated with the concept of social justice. In order to live together within the city boundaries and avoid conflict, every user, regardless of their differences/similarities, has equal rights to benefit from the resources provided by the public space. This assumption can be based on the basic principle of “All human beings are born free and equal in dignity and rights”, as stated in the first article of the United Nations (UN) Universal Declaration of Human Rights (UDHR) 1948. This is to say that ‘equality’ is a fundamental right that everyone should have from birth (BM, 2023). However, in urban space, it can only be said that users have equal rights within certain limits. This leads us to the concept of ‘urban inequality’, a topic that has been discussed at the intersection of architecture, sociology, and economics since the Urban Ecological Theory of the Chicago School. The concept of urban inequality is an issue that is addressed together with differentiation in urban space.

The issue of 'differentiation in urban space', which is a sub-research topic of urban ecology, was discussed simultaneously in terms of equality-inequality and unity-differentiation with the definition of urban space by the Chicago School (Serter, 2013). Robert E. Park and his followers Roderick D. Mc Kenzie and Ernest W. Burgess, with a positivist approach, transferred concepts from plant and animal ecology to urban sociology within the idea of symbiosis (Yörükhan, 1968). These sociologists associated the change in the formation of urban space with the issue of 'competition' in ecology and considered the formation of urban space as a process that would stabilize over time. Therefore, what is meant by spatial equilibrium can be regarded as unique and flexible new forms of coexistence. Mc Kenzie and Burgess see liberal policies as the main reason for various interventions in the management of this process. In this sense, they considered the struggle of disadvantaged groups to claim their rights in the urban space within natural processes as negligible with reference to nature. The emerging concept of urban justice draws attention to 'injustice' in terms of basic rights such as housing. However, the concept also encompasses meanings such as discrimination, poverty and exclusion. These negative concepts show that the problems of non-normative social actors cannot be solved by the rules established to ensure social justice in the urban space. Nevertheless, it seems that non-normative actors are forced to obey legal, economic and social rules in the urban space. It can be argued that actors who are defeated against the powerful often resort to passive resistance methods as a unique and flexible solution instead of engaging in a direct struggle. Here, the concept of tactics developed by social actors against the strategy developed by the authority emerges.

In the 21st century, spatial tactics have gradually developed due to neo-liberal policies that are increasingly effective in shaping urban space. Tactics, a concept developed by Michel De Certeau (De Certeau, 2008), who was able to combine Foucault's discourses on political power and Bourdieu's habitus in his own sociological thought structure, and who is also known for his distance from Marxist thought, is the result of the strategies developed by the political power to implement its ideologies on the public.

Developed against the strategies implemented to keep social actors under control, tactics are not directly recognized as they are developed as non-normative. However, the strategies of the authority can be clearly seen in the design elements preferred in the urban space. However, it is accepted by most authorities that architectural design, which is not one of the institutions directly incorporated by the state such as pressure groups, is used indirectly as a directive element by the central government.



According to Foucault (Foucault, 1995), this new form of political power, which is not disciplinary in the classical sense, prefers indirect methods for control-surveillance-governance instead of directly punishing social actors. Described as a 'strategy', this form of governance represents a new approach to the oppressive attitude of pre-Enlightenment power. The tactics developed against the strategy are the vital practices developed by individuals who object to the systematic life organized according to the decisions of political power in order to avoid sanctions.

The analytical distinction of the concepts of 'strategy and tactics' put forward for urban space by Michel de Certeau, one of the important names of the theory of everyday life, can be clearly observed in the architectural spaces of capitalist cities shaped within the norms of bio-power. Therefore, the architectural elements in public spaces, which are the meeting places of political power and the public, can be considered as the means of governance of the political power as well as democratic methods of spatial organization for the governance of individuals. However, it seems that social actors have also developed various tactics to overcome the rules of society and law.

Political powers based on the claim of rationality have started by eliminating differences in order to create the society they idealize. For this purpose, standardized architectural spaces at all scales have become an element of discipline in new urban spaces. In this respect, public spaces, which are quite detailed plans, are the form of indirect pressure elements that are created according to the demands of the political power in rational forms, transformed into strategy. However, social actors within geometric forms that glorify the idea of modernism based on the superior inclusiveness of rationalized thought and scientific knowledge do not live as imposed by architecture. To the contrary, social actors live according to the tactics they develop in everyday life as directed and organized by social relations. This life is formed in line with dialectical materialism and the conditions of the capitalist order's daily life, which puts the individual at the center and glorifies individualization. This has led to a day-by-day metamorphosis and/or reproduction of strategy and tactical practices. In this context, it can be argued that territories on a micro scale, where the urbanites defend their rights, take place in opposition to the mechanisms that reproduce architectural space in line with institutional policies.

What determines the boundaries between territory and public space is the importance given to the concepts of strategy and tactics beyond geometry. The tolerance shown to the rulers and the ruled as a result of the dilemma between

the political power and the people also determines the boundaries of the space. The freedom of the parties within the determined boundaries is an approach that reduces conflict. This can be regarded as a very practical approach for authorities aiming to ensure the continuity of order. To this end, the boundaries of architectural space determined by a normative approach can be changed through strategies and tactics. For this, we must first define the boundaries set.

Territoriality is generally defined as the defense of a demarcated territory. The defended place is often referred to as a 'territory'. Essentially, territoriality is a frame concept that allows behavioral ecologists to identify and hypothesize connections between various aspects of animal biology. Territoriality goes beyond the geometric shaping that is effective in determining borders, but also refers to the privileges granted to actors in a given territory. In this regard, it should not be confused with regionalism, a concept that is identified with separatism in contrast to the principle of equality.

In order to understand the concept of territoriality, the definer must also explain their point of view. From the perspective of the people towards the political power, territoriality can be perceived as various tactics developed for passive resistance, whereas from the political power towards the people, it can be considered as a kind of strategy. In this context, territoriality may be described as both a strategy and a tactic. Therefore, it can also be argued that rules in public space can be transgressed when deemed necessary by the political power and the public. The boundaries of the crossed space can be stretched to the limits allowed by tactics and strategies.

### ***2.1. Literature***

Tony Garcia, an architect, and Mike Lydon, an urban planner, created the first guidelines on tactics in public space in the United States in 2012. New studies are being added day by day to the literature enriched with examples from Australia, New Zealand, Italy and Latin America.

In terms of architectural practice, the realization of change in urban space through various temporary interventions without crossing borders is usually realized in places with a high level of harmony and few urban conflicts. The success of the tactic is based on operating in a limited and privileged field of action. These privileged fields of action are more noticeable in private areas intended for public use. As the tactic can be interpreted as the articulation of private interests with improvements supposedly made for the public good, it

conflicts with the idea of a more democratic and equitable city for all. In this respect, territoriality is also a public problem.

Territoriality as a public problem is a concept that has been defined before spatial tactics. There are two approaches to defining territoriality as a concept. The first one is Irwin Altman's definition of territoriality, which points to personalization behaviors such as territorial marking and defense based on the behavior of living beings. Altman defined the concept of territoriality according to environmental psychology as "territory is the formation of an area to achieve optimal privacy that is sought by developing physical settings" (Altman, 1975). The second one is defined by Robert David Sack as the spatial effect of the power strategy used by the political power to govern the society, which is mostly used in human and political geography (Sack, 1986). As these early definitions suggest, strategy and tactics are intertwined concepts.

Mattias Kärholm has categorized the term into themes to analyze territoriality consisting of intertwined concepts. Accordingly, in his research on the use of the term territoriality as a scientific concept, Kärholm identified three main themes, which can be categorized into seven sub-themes (Kärholm, 2007). Two of these sub-themes are particularly important as they overlap with strategy and tactics. These are territoriality for defense through active control of a specific area and territoriality for identification with an area through an emotional connection to it. These sub-themes are classified according to the approach in which territoriality is analyzed as a behavioral model and are very useful in analyzing the different types of Kärholm's discussion of territoriality. Thus, it is possible to distinguish between territorial association, which means setting rules on how a place should be used, and territorial appropriation, which means that an individual/group 'appropriates' a place.

Ralph B. Taylor (Taylor, 1999), another representative of the behavioral approach, defines territoriality as an intertwined system of attitudes, emotions and behaviors. Although these approaches provide an insight into the understanding of territoriality, it is quite difficult to define the concept precisely. This is because people's understandings of territoriality are idiosyncratic, unique and flexible. Taylor's approach focuses on the informal, small-scale, social network-based behavioral approach, while excluding the larger-scale, formal structures.

The strategy pursued to maintain spatial order allows for the easy definition of free and forbidden areas in public space. As such, the social actors do not realize that they are subjected to discrimination due to the visual signifiers of the architectural space. Through visual signifiers, which have become a hidden

means of expression among peers, a symbol on a wall can signal territorial boundaries that should not be violated for some non-normative actors. In this respect, Taylor's social network-based behavioral theory can also be related to the Darwinian evolutionary approach as it draws attention to territoriality behaviors among people.

Ethological research on the behavioral patterns of living beings when they are together has revealed that territoriality behavior is not observed in all living beings. The fact that territoriality behavior often occurs when there is stability and foresight in accessing local food sources can be associated with 'power'. Therefore, it is arguable that territoriality in public space is seen as the right of the powerful. The idea that urban space is shaped according to the powerful in Marxism, which is an economic-based approach, can be interpreted as that those who have the right to property are also influential in the shaping of urban space. With regard to the territoriality behavior, Taylor points out that when territoriality behavior is interpreted according to the evolutionary theory, the strong are also advantageous in changing the space, as in the Marxist approach. In this regard, it appears that claims to territoriality governed by the rules of governmental agencies are regulated and transferable through property. The borders of spaces where property rights are granted by governmental agencies are allowed to be secured with walls and security systems. Therefore, it can be argued that while territoriality grants various rights to normative users, it has complex and discriminatory procedures for the non-normative actors.

According to Garreth Hardin, who theorizes on the basis of partnerships in contrast to a discriminatory understanding, the powerful and the powerless maintain order through the partnerships of their own environment. Developed the life boat theory, Hardin argues that the powerless and the powerful should live a closed life in their own environments, and that human territorial behavior evolves and is passed down from generation to generation as a cultural heritage, therefore, commonalities are learned through cultural transmission (Garrett, 2001). Accordingly, humans know their personal boundaries by following the traces left by their predecessors, i.e. their ancestors, in the shared space and act accordingly even if the boundaries do not physically exist.

Similarly, Owen Lovejoy's theory of the Origin of Man states that the boundaries in space were formed by early social organizations and that space was shaped as a result of the distribution of roles in social organizations. "Lovejoy's theory also proposed that sexual dimorphism suggested that food gathering would improve the infant survival rate. Males were responsible for

provisioning the females, whereas females protected their offspring” (Lovejoy, 1981). In this respect, it is emphasized that gender is an important element in social organizations. This approach suggests that gender is also determinative in the public space where social behavior is exhibited. Given the continuation of a system in which men work and women take care of children, it is clear that those considered powerful in the urban space are actors with masculine characteristics. In this context, it is possible to conclude that territoriality in urban space is shaped by masculine domination perceived as an element of power. However, it is very difficult to use this classification, which is thought to have emerged on the basis of social organization, to analyze today’s social functions. The impact of such gender-based social organizations on urban space is still undeniable. When we evaluate this situation in the modern urban context, it is seen that territoriality still has a fundamental social mechanism.

Appropriation is an important concept in Henri Lefebvre’s theories on the social production of space. According to Lefebvre, appropriation is a resistance of urban dwellers against the faceless domination of power elites over urban spaces. In addition, appropriation, a concept that needs to be discussed, can also involve exclusion.

In his work ‘The Production of Space’, Lefebvre states that the institutional policies produced for the city ignore the fact that the city is a social space in which complex relations are embedded (Lefebvre, 2014, s. 15). Lefebvre, who is known to adopt a Marxist approach, states that these complex relations, ignored in the urban space, cannot always be expected to be in harmony. Conflict theory suggests that conflicts, encounters, oppositions and social objections also need to be spatialized (Sezgin, 2008). It can be stated that the understanding of dialectical materialism is effective in shaping the urban space in relation to this interaction arising from oppositions (Altuntaş, 2015). In dialectical materialism, practice is not explained according to ideas, but the formation of ideas is explained according to material practices (Marx & Engels, 2013). As such, the material practices occurring in the city cause different ideas to become visible by constantly changing in space and time. This has led to the question of which social power is responsible for the material practices in urban space.

### **3. MATERIALS AND METHOD**

In order to investigate territoriality, as the main research topic of the study, micro-structures that could constitute a social revolt against the ideological thinking behind the borders determined by the political power in the historical

peninsula, which is a multi-layered public space, were examined. The historical peninsula, where the indirect architectural practices developed by the political power to establish authority and social control in public space are visible, completely overlaps with the borders of Fatih District. Eminönü, Sultanahmet, Sirkeci, Beyazıt and Laleli districts, where different social actors coexist, were selected as the sample for ease of study and in-depth analysis.

Visual data from the public space selected as the research area were created using observation and documentation of the existing public space practices within the determined limitations. The content analysis method used in selecting the units to be included in the sample is based on the phenomenon of ‘visual perception or comprehension’. For this reason, visual data were collected for the analysis through on-site observation and photographic documentation on the route determined within the scope. With the observation of architectural practices within the research area, visual data were collected by considering the chronological process of architectural construction. It can be argued that an inductive approach was adopted in the research, in which extensive observation and documentation were intended to be made in line with the depth and breadth of the subject.

In order to review the current status of research in the field of public space design, the general survey model was used from the quantitative research methods. The general survey model, where data are collected in a systematic way and compared with data in the real environment, allowed the distinction between tactics and strategy. Thus, architectural practices are classified according to discipline, purpose and practice.

In exploring the relationship between architectural form and function, Kärholm proposed a conceptual frame consisting of four regional modes of production. The proposed model is based on diversity on the one hand and territorial control on the other (see Table 1).

**Table 1:** Forms of territorial production

	Impersonal Control	Personal Control
Intended Production	Territorial Strategy	Territorial Tactics
Production Through Use	Territorial Association	Territorial Appropriation

**Source:** Kärholm M (2007) The materiality of territorial production a conceptual discussion of territoriality, materiality, and the everyday life of public space. *Space and culture*, Sage Publications 10(4): 437-453.

This study evaluates the production of territoriality within Kärholm's form-function model presented in Table 1.

#### 4. FINDINGS AND DISCUSSION

The visual findings obtained in the study were evaluated by visual content analysis method based on Kärholm's model in accordance with the theoretical background. This evaluation revealed that territoriality practices based on tactics and strategy were economically based in line with Marxist theory. It can be argued that while architectural spatial arrangements in the public space differ according to the characteristics of political power and people, they are basically shaped according to a deeper discrimination such as race, ethnicity and gender. In this context, a spatial attack and defense is not noticeable at first glance in urban/public space. Disproportionate practices with deliberate intentions were more visible. We also found that architectural solutions produced as a result of tactics and strategy can easily be confused with examples of poor design. Figure 1 shows that there are no restrictions on the use of urban furniture by the users. However, the fact that the boundaries of the seating elements are not determined to ensure territoriality in the space leads to a partial achievement of territoriality. This may suggest that a particular strategy has been pursued to ensure that users do not define territoriality in the case of this urban furniture. Thus, it is predicted that more people will benefit from the seating element. Yet, the users demonstrated their temporal territoriality by sitting one by one on the seating elements, as shown in Figure 1.



**Figure 1:** Impersonal Control-Territorial Association

**Source:** Photos are from the author's private archive

Many examples found during the research revealed that architectural practices cause users to experience physical inadequacies. In this respect, it



can be argued that the restricted physical environment in public spaces also limits socialization. Even though users think they expand their territories into public space through territoriality, they in fact force themselves to stay within the boundaries they set. Therefore, it was unclear for which social actors the territoriality features of such architectural practices were developed.



**Figure 2:** Impersonal Control- Territorial Strategy  
**Source:** Photos are from the author's private archive

As a strategy of political power in public space, railings are remarkable as a boundary element. The railings on the same route were different from each other. This suggests that architectural elements that can be made functional for resting in areas where there are no seating units have been selected in special forms in order to guide the public. This practice, which can be considered as a strategy used by the political power to maintain social order in the urban space, has been observed to be overcome by the tactics of the people in many places. In Figure 2, although there is no seating element in the surrounding area, it is remarkable that there are people sitting in the area designated as off-limits inside the railings.



**Figure 3:** Personal Control- Territorial Appropriation  
**Source:** Photos are from the author's private archive

Various strategies have been observed to be preferred to prevent non-normative social actors from sitting or lying down for long periods of time at the stops of public transportation, which is a part of the public space. In this context, we realized that these ergonomic details, which at first glance are thought to have been created for the determination of territory, are actually designed to remove non-normative actors from the public space. The fact that the seating element at the tram stop in Figure 3 is divided by armrests is not for user comfort. It prevents social actors from sleeping in this space.



**Figure 4:** Personal Control- Territorial Tactics  
**Source:** Photos are from the author's private archive

As for the areas that can be defined as the boundaries of personal-public space, we observed that territoriality practices have become more visible. Examples of territoriality-based applications in architectural space have been found to differ according to the characteristics of the users. The common characteristic of these applications was that they aim not only to improve the function of the architectural space, but also to gain land for expansion. In the case shown in Figure 4, although placing a flower bed outside the boundary of the space is perceived as a naive act, it is actually a violation of public space. Such expansions from public to personal space are out of the question. In addition, we noted that the right to exclude from private property and the right to access or pass through a public place are prevented with the help of architectural elements.

**Table 2:** Forms of territorial production in İstanbul

	Impersonal Control	Personal Control
Intended Production	Territorial Strategy 	Territorial Tactics 
Production Through Use	Territorial Association 	Territorial Appropriation 

**Source:** Photos are from the author's private archive

Table 2 presents the visuals of the evaluation of the İstanbul historical peninsula sample according to the production of territoriality based on Kärholm's form-function model. As can be understood from Table 2, the concepts of strategy and tactics are intertwined in terms of territoriality in space. However, it can be argued that the personal and public space has become quite ambiguous in the urban space. Observed examples show that the boundaries of public space in the city can be reduced to the human body.

## 5. CONCLUSION

The study revealed that architectural space embodies a systematic social inequality in the physical space experienced in daily life, and that these predetermined features of the built environment control and restrict our behavior by structuring our relationships. However, this restriction and control can be seen on a wide range of scales, from a municipality deciding to remove a bench on which homeless people sleep to a group of neighbors deciding to fence their own yard. This suggests that territorial tactics and territorial strategies derive from each other rather than creating a conflict.

Territoriality can be defined as spatially delimited control. A territory is a demarcated area characterized by a certain set of rules or a kind of regular behavior. This definition is quite wide and can explain a wide range of different phenomena such as a nation, a parking lot or one's favorite bench. But, it does not express the approach to the concept of territoriality. Here, it is clear that there is a difference between the territoriality approach of human beings and other living beings.

Consequently, the findings showed that some of the examples examined in the research were based on a particular conceptual approach. The examples of strategies and tactics produced in the research area were mostly realized in order to find a solution to an urgent situation. In addition, a small number of examples were found to be based on a purely tactical approach. This can be attributed to the fact that legal rules are effective in limiting tactics. Moreover, we realized that designers internalized the concept of strategy and made designs in line with the wishes of the government. In many cases, they even ignored ergonomic features in order to follow the strategy.

Territoriality is practiced by the vast majority of social actors without much thought. In this context, it was clear that the issue of territoriality has the potential to change as the concept of social justice in space evolves.

In order to prevent conceptual confusion, the issue of territoriality needs to be developed in terms of literature. There is no definition uniformity even in strategy and tactics, the key defining concepts of territoriality. In addition, the findings revealed that the architectural elements that constitute the design of public space tend to be seen as a singular product. However, all types of furniture in public space should be considered as integrated with the space.

This study tested the hypothesis of the research and showed that the tactics developed for territoriality, which is a form of passive resistance in public space, formally affect the strategically designed public space in cities. Future studies may relate the concept of territoriality to culture and examine the boundaries of culture-specific territoriality such as personal space.

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## CHAPTER X

# SPATIAL TRANSFORMATIONS OF OFFICE DESIGNS THROUGH THE CONCEPT OF GENERATION: HYBRID WORK AND MOBILITY<sup>1</sup>

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## 1. INTRODUCTION

Technological advancements brought by the era; ease of communication, the ability to reach anywhere in the world in seconds with a single move, no country or organization can keep itself away or isolated from these developments. Adapting to the rapid changes brought by this fast-paced era, as well as coping with the problems and challenges that arise, affects individuals, institutions, and organized work platforms' future plans, subjecting them to constant transformation and change.

In the Digital Age, which is one of the pillars of the Industrial Revolution, the ability to access the internet from anywhere, the capacity of technological devices that process data and store information, and smartphones to facilitate communication in any condition have caused changes in the workflow structure in office environments, even at the simplest scale, in the business world.

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<sup>1</sup> This book chapter presented in this book is produced from the published PhA Thesis titled "Spatial Transformations Of Office Designs Through The Generation Concept: A Mobile Office Proposal In Hybrid Work" by Refia Anıl Ağrılı with a thesis number 768427, which was made at Marmara University in August 2022.



There are boundaries in which value transfers and interactions between generation gaps are determined, and their characteristics and common features are identified. The classification of generations is also widely used in business literature for the formation of business models and human resources. The Y and Z generations, which encompass young and adult categories raised according to the requirements of the modern age, are preparing themselves for the future and business life with an open-minded approach by easily adapting to new knowledge and skills. Companies that employ previous generations in their current structures - especially when considering that the X generation holds managerial or important positions - are compelled to make changes in work discipline, job description, and job organization to preserve their cultural and institutional identity.

In the business world where competition, branding, and globalization are becoming increasingly important, managers are now making adjustments in the suitable working environment, form, and hours to increase the productivity of their employees, enable them to carry out their work without disconnecting from their social lives, and to make their institution-brand recognizable by establishing effective communication. This situation has led to the emergence of flexible working spaces, the emergence of a concept that we can call “Mobile Employees” today, and the development of new office structures based on the formation of new working models. In fact, at the core of this formation lies the perspective of the Z generation, who will join the workforce in a few years, who do not like to work in a single area limited by specific furniture, and who reject rules, obligations, and restrictions.

The changing concept of the office and workspace is leading to changes in workspaces and work models. As a result, different types of workspaces such as home offices, café offices, serviced offices, and shared workspaces (co-working) are being considered, along with their characteristics and examples. Hybrid work approaches that have emerged due to changes in work processes and models driven by technology, as well as the impact of generational differences on workspaces and the workspace preferences of different generations, are also discussed. In these trends, mobile working is examined as a hybrid approach and evaluated through the concept of mobility and flexible architecture.

This study aims to identify the behavior patterns of generations and their expectations from workspaces and to question and analyze the adequacy of the design conditions based on research conducted in Turkey and around the world. The concept of changing office and workspace is discussed, and the



sociological and innovative change process of technological developments is presented. Along with the concept of mobility, the hybrid working model, which enables users to work in connection with their offices in intermediate locations in addition to working in the office or at home, is examined from user behavior psychology, technology, and innovative perspectives

The research findings were determined through a literature review, surveys, oral interviews, and observation methods. Specifically, the scope of the study and the survey group were evaluated based on three generations (X, Y, Z). Based on the objectives and findings, the concept of “hybrid work,” which refers to work in flexible hours and spaces, was defined. The scope of the time-saving hybrid work approach was revealed. Expectations and innovative approaches were used to demonstrate the impact of research on expectations and innovative approaches, enabling every environment to be transformed into a workspace and allowing people to work in areas where they feel more free and comfortable by using technology.

## **2. THE CONCEPT OF OFFICE AND SHORT HISTORICAL PROCESS**

Offices are spaces where people work together or individually, either in a room or on a larger scale. According to the Turkish Language Association, the concept of “office” comes from the French word “office” and is defined as a workplace, office, or bureau. The term “bureau,” which is synonymous with this concept, is defined as a workroom, office, place for consultation and writing, department, branch, or writing desk by the TLA (<https://sozluk.gov.tr/>, 2019).

Offices have undergone significant changes throughout history. Office spaces, which have been influenced by social, cultural, and historical events and situations, have varied in their use and design due to the impact of technology and digitization. The changing definitions and requirements of office and workspace, the increasing involvement of women in the workforce over the historical period, growing social needs, and technology’s ability to facilitate more flexible working models have led to the differentiation of office interior designs and changes in processes.

At the beginning of the historical process of offices, the Uffizi Complex building, also known as “Palazzo Degli Uffizi”, is considered as the first office structure. Construction of the building, which was designed by the artist Giorgio Vasari to house the administrative and legal offices of Florence, began in 1560.

Upon Vasari's death in 1574, the building was completed by Alfonso Parigi and Bernardo Buontalenti in 1580 ([www.uffizi.it](http://www.uffizi.it), 2019).

The changing concepts of trade and production with the Industrial Revolution also led to the shaping of office spaces and the evolution of a spatial organization. This necessary transformation covers the period between the 16th and 18th centuries, during which it is not fully understood which space was used as an office for what purpose. This period also corresponds to the time when bourgeois and upper-class individuals shared offices with three or four people, and employees worked in separate rooms as income levels decreased (Onaran, 2012). The Industrial Revolution can be defined as the conversion of energy production based on physical labor into steam power based on the use of coal, which allowed for increased and more efficient production of goods. This led to the emergence of factory systems and paved the way for greater employment of women in the workforce. Essentially, the Industrial Revolution represented the transition from an agricultural society to an industrial one, bringing about changes in societal and cultural structures, as well as significant shifts in social and economic aspects of life.

By the 19th century, with the increase of railway lines and institutional growth of trade, distinctions began to arise between work and living spaces. As a result, office buildings began to be constructed. These office structures were built for businesses such as banks and insurance companies and had similar floor plan typologies and facade designs. These two or three-story buildings had three types of ground floor plans: office buildings placed along the main corridor axis, offices grouped around a courtyard, or offices arranged around the main room (Çimen, 2008).

Looking at office buildings in the context of changing economic understanding and new social orders under the influence of globalization, the dominant office culture of the 20th century can be traced back to Frederick Taylor's work from 1856-1915. Taylor developed the approach of "Taylorism" to increase industrial efficiency in workspaces. This approach focused on increasing work productivity through the systematic placement of desks and positioning managers where they could observe employees. This led to the emergence and development of open office space organization, and this system became popular in the early 20th century.

By the 1970s, the evolution of office buildings began to diverge between Europe and America. The higher standard of living in Europe led to planning focused on improving working conditions and creating more equal, ergonomic

and standardized workspaces for all employees. This resulted in a return to the use of cellular offices with natural ventilation and lighting that can be organized by the user (Hascher et al., 2002).

Starting from the 20th century, technological developments have led to specialization in different fields of work within office environments. Multi-story office buildings began to be designed, and supportive open-plan and cellular office spaces were created in accordance with the business model in the space organization. Physical and organizational office space models were used separately or together. With the increasing number of people working in the expanding trade and digital industries, and the emergence of new business sectors, office buildings with horizontal architecture began to be designed as vertical and multi-story. Today, the concept of the office has become a ubiquitous notion, as communication and portable technological devices (PCs, tablets, smartphones, etc.) and infrastructure capabilities have enabled people to work from anywhere, such as homes, cafes, or rented workspaces. It is no longer considered merely a physical space, but rather a service that is independent of a defined location.

### 3. THE CONCEPT OF GENERATION AND CLASSIFICATION

The theory of generations was first introduced by Karl Mannheim in his 1923 work titled “Problem of Generations.” (Bayramoğlu, 2018). In this work, Karl Mannheim defined the concept of generation as “a group of individuals of a certain age who have experienced significant historical events during a particular period of time.” (Mannheim, 1992). The term “generation” is defined as “a group of individuals forming an age range of approximately 25-30 years, also referred to as a community or a demographic group” by the Turkish Language Institution. Another definition by the same institution states that “a generation is a group of individuals who were born in approximately the same years, shared similar living conditions of the era, and thus faced similar struggles and responsibilities” ([www.tdk.gov.tr](http://www.tdk.gov.tr)).

Scott Gross (2017) also mentions the basic rule that one generation spans twenty-five years. Natural tendencies provide a basic potential range for historical, technological, and social processes, including the succession of generations. However, it cannot be explained about generational changes by stating that specific characteristics of a change process will always exist or that different approaches will always be present. The levels of inclusion in a

change are only explicable by looking at the shaping effect of dominant societal, cultural, and technological processes.

Fundamentally, generations are referred to as Silent Generation / Traditionalists (born 1946 and before), Baby Boomers (born 1946-1964), Generation X / Baby Buster (born 1965-1979), Generation Y / Millennials (born 1980-1996) in academic literature (Zemke, Raines, Filipczak, 2013). Stillman (2019) defines Generation Z as those born between 1995 and 2012 in his book “Gen Z Work.”. The Alpha generation (born 2013 and after) is widely accepted with well-defined boundaries. Scientific studies based on this general acceptance are prioritized within the scope of this study.

### ***3.1. X Generation***

In Turkey, this generation has been referred to as the “transitional children” or an inter-generational group. The X generation is a resilient, pragmatic, and idealistic generation that faced the harsh realities of a changing world with a sense of social responsibility and loyalty (Ayhün, 2013). It would be accurate to define the X generation as a group that serves as a bridge between the previous and next generations. The X generation, which is thought to have lived in the shadow of the baby boomer generation, is seen to differentiate from this generation with its main characteristics. Besides having their own culture, this generation stands out from boomers with their more entrepreneurial spirit (Gross, 2017). They are more comfortable with technology, value knowledge, and prioritize their independence with their creative thinking abilities. It was also observed that they value work-life balance.

### ***3.2. Y Generation***

This generation is seen as a period in which technology and digital opportunities began to develop rapidly, and work-life began to be conducted more through these opportunities. Gen Y is the first generation to use social media at an advanced level with the development of technology. The people of this generation grew up in times when mobile phones and computers were becoming increasingly common (Ferek & Ayazlar, 2020). The generation growing up with technological advancements is truly the first to benefit from it. This generation, also known as “digital nomads”, grew up with computer systems and began to access all kinds of data and information worldwide more easily with the opportunities offered by technology, thus becoming the pioneers of mass media with the further development of social networks by global companies. They can think quickly and multitask effectively. Unlike

Generation X, they can quickly disengage from topics that are not important to them. This generation is seen as a harmonious generation trying to find their way between the extremes of Generation X and Generation Z, who are more loyal to themselves than their jobs. They are often defined as the generation that feels the most difference among the generations.

It should be remarked that in today's world, the Y generation values elements such as entertainment, travel, living life, trying new things, success, money, shopping, knowing what they want, hard work, chasing their dreams, questioning, and spending time with loved ones (Twenge, 2018). Ritter (2014) describes the Y generation as being more open and transparent, which makes it more likely for them to conduct business activities or work with a wider range of people. Additionally, Ritter notes that the Y generation is not highly loyal to an organization or company, which can be a negative aspect of leadership, but they are also knowledgeable, skilled at multitasking, and have a diverse set of talents that should be appreciated. (Ritter, 2014).

They are motivated to maintain their personal lives in parallel with their work lives and strive for constant feedback. The career goal of the Y generation can be defined as creating several parallel careers and doing multiple jobs at the same time. In addition to being accustomed to being the center of attention, generation members who have high expectations also clearly define their goals (Adıgüzel et al., 2014).

### ***3.3. Z Generation***

While literature and research studies on Generation Z are not as numerous as those on previous generations, their recent entry into the workforce has led to increased scrutiny of their characteristics and work habits. They are eager and successful in communicating and interacting with different sociological groups, identifying themselves as global citizens and tending to downplay the importance of sociological characteristics such as ethnicity, language, race, etc.

Gen Z have a strong inclination towards standing up for their rights and rejecting injustice. It can sometimes cause conflicts in both their personal and professional lives. They have a rich imagination and creative thinking skills and are known for their ability to multitask and perform multiple jobs simultaneously. While their skills, intelligence, and outlook on life are similar to those of Generation Y, Generation Z is more inclined to rebel against authority and refuse to follow rules, in contrast to Generation Y's tendency to respect authority.

Considering that managers in the workforce are mostly from the X generation, constant conflicts between these two generations are inevitable. The X generation tends to be more rule-bound and strictly adheres to work-related regulations such as the concept of working hours. While the Z-gen as employees could not comprehend the perspectives and control mechanisms of X-gen managers. At this point, the Y generation has come in and could serve as a bridge in communication between the two generations.

#### **4. CHANGING OFFICE SPACES AND WORKPLACES WITH GENERATIONAL DIFFERENCES**

Technological advancements and changing expectations of different generations have led to new arrangements in the concept of workspace. As mentioned in the previous section; The expectations of the generations in the workplace, the time that they allocate for their personal lives, and the increased use of digital platforms by society has caused many parameters in the world to change, leading to the updating of the concept of workspace. Not only in office spaces, but also in many areas where humans exist and are referred to as spaces, the concept of work has been opened up.

In his report “Making Space for Others” published in 2013, Churchill described the changing work environment as follows: “According to a report by IDC in January 2012, the world’s mobile workforce will reach 1.3 billion by 2015, representing 37.2% of the total workforce. These conditions surrounding the emergence of collaborative workspaces will continue to affect the spaces we all work in.” (Churchill, 2013). The rapid technological and economic developments that this prediction in 2013, have resulted in significant changes in the concept of work and workspace. As we begin to live in an information society at the peak of the knowledge and technology economy, flexible, sustainable, and shared spaces have emerged as viable options for working. These changes had created new opportunities for using shared spaces for work, thereby altering our understanding of the traditional office space.

Due to the COVID-19 pandemic that began in 2019, designers and users have had to rethink what an office is or should be. Before the pandemic, workplaces were designed to bring people together, share spaces and resources, and allow individuals to freely move between a range of working environments. However, the pandemic had led to a reevaluation of workplace values, as well as office and workspace design (Ravenscroft, 2020).

The Coronavirus pandemic can be characterized as the most dramatic disruption of our office work culture. Along with the Y and Z generations, the

development of technological infrastructure networks has taken a fundamental step in changing the traditional office culture, and companies around the world have been forced to embrace remote work and digital technology that supports it. The reason for this is that the internet and technological devices offer instant communication in almost any location, providing flexibility and a culture of independent work to many people who can work from anywhere they want.

#### *4.1. Home Offices*

In the 21st century, remote work has become a more common practice. Many small businesses have shifted their operations to home offices as a way to reduce operational costs, typically using their main offices for administrative tasks. With the growth of the internet, home offices have offered a cheaper and more affordable option compared to offices in large metropolitan areas. Renting office space has been a financial burden for businesses, and with the consideration of other costs such as furniture and office supplies, the remote or work-from-home system has become increasingly attractive for business owners

According to Zimmerman (2001), home-based work began to emerge in the late 19th century when workrooms in homes started to be used as home offices. By the 2000s, many people were using their homes as workplaces or opting for smaller home offices to make financially and personally successful ventures. This preference is leading them towards a better personal lifestyle, providing greater freedom to save time, and money and achieve personal goals (Zimmerman, 2001).

Due to increasing economic costs, many workers are seeking suitable job positions that allow them to work from home, or applying to companies that offer a flexible work model that allows them to work partially from home and partially from the office. There will likely be an increase in companies with a hybrid work model. Working fewer days in the office could make employees willing to travel further on office-based days, resulting in time and fuel savings from reduced commuting, as well as potential net environmental benefits from reduced transportation (Cicala, 2022).

#### *4.2. Cafe Offices*

One of the alternative spaces that individuals use for work to prevent the psychological effects of the constant home presence and the work-life balance that remote workers struggle with is co-working spaces such as cafes.

Coworking spaces can be considered as part of the concept of shared working spaces, contributing to the “work wherever, whenever, and however



I want” mindset that is a priority motto of the Y and Z generations who actively participate in the workforce in the 21st century. The concept of shared working spaces has emerged as a new generation work-model that provides flexibility, enabling independent individuals to work at unspecified times and durations (Tunç & Sevinç Kayıhan, 2018).

In recent years, breaking the monotony has become an important motivation for remote workers, whether they work from home or from the office. At this point, co-working spaces in coffee shops or cafes have become workspaces that employees can take advantage of. Humans are social beings and interacting with others is important for our mental health. Constantly working from home, especially for someone who lives alone, can limit their interactions with other people. Working in cafes provides people with the chance to socialize and interact, which can help in this regard.

As businesses have started to multiply under a hybrid model that combines the comfort and food and beverage services of a cafe with the productivity and equipment of a shared workspace, the lines between cafes and shared workspaces have become increasingly blurred, and the boundaries of workspace definitions have become more flexible. The hybrid model, designed to function as both a workspace and a café, has both advantages and disadvantages. The biggest difference between a shared workspace and just a café lies in the purpose and perspective of the people using the space. Individuals who frequently use shared workspaces and have flexible work arrangements expect the space to serve as more than just a place to grab a coffee and sit down. They want a shared workspace that will allow them to work with maximum efficiency (Johnston Taylor, 2016).



**Figure 1:** CoworkCafé, Arlington

**Source:** (Johnston Taylor, 2016)

The cafe working model has both positive and negative aspects, which are brought about by the change in environment. The benefits and advantages of this model have included relaxation, prevention of boredom, motivation and energy from the change of scenery and coffee, meeting new people, socializing, and drawing inspiration from the situation. However, it should not be overlooked that there are also disadvantages that could have a negative impact on the workers. While working in a bustling environment with people around may seem ideal for combating feelings of loneliness, it could be quite distracting depending on what you're doing and how you like to work. Especially in a noisy environment or at tables with intrusive individuals, working could be challenging for the individual.



**Figure 2:** Walter's Coffee Roastery, Moda

**Source:** (www.themaggar.com)

### ***4.3. Serviced Offices***

A serviced office, also known as a fully-equipped office or an office provider, is an office or office building managed by a facility management company that then rents individual offices or floors to other companies. Serviced offices, also referred to as flexible offices, business centers, executive suites, or executive centers, are typically located in business districts of major cities worldwide. In addition to office services, serviced offices also provide other service activities. These typically have included on-site reception services, a management team, call and mail handling services, wifi, and other included and additional concepts. While not all serviced offices offer the same services, they all consist of people, places, and technology. Regardless of the worldwide serviced and virtual office

company, they all consist of a combination of the three main components mentioned above (San Jose,2016). All other serviced office providers (flexible workspace providers) offer hybrid formation possibilities of coworking spaces and serviced offices, and additionally add some service criteria according to the needs of the employees.

A virtual office is a rental system for businesses or individuals who do not have a physical office but require a legal address, communication, and secretarial services. The virtual office offers a physical address and related services without long-term rental agreements and administrative personnel burdens. Employees working with a virtual office can work from anywhere but still have access to things like a mailing address, telephone answering services, meeting rooms, and video conferencing (Kenton,2021).

As more people start to work remotely, the benefits of serviced offices are becoming increasingly apparent. Especially in recent years, with the widespread adoption of entrepreneurship and technological advancements, more and more young entrepreneurs are seeking to establish their businesses and work as freelancers. The individualistic nature of Generation Z and their tendency towards flexible working models are thought to increase the trend of using serviced offices.

#### *4.4. Coworking Offices*

The concept of coworking can be considered one of the oldest activities in human history. As people started to live in communities, they worked together to produce and survive. Technological advancements have made it easier to spread this concept and have led to the widespread adoption of coworking spaces (Foertsch, 2011). The concept of coworking, which was first used by Bernard De Koven as a way to describe collaborative work in 1999, rapidly spread worldwide after that date (Meunier, 2015).

Co-working spaces are office space structure that combines shared workspaces, cafe offices, and serviced offices. These spaces include many functions such as shared and dedicated individual workspaces, ready-to-use offices, meeting rooms, social interaction and sharing areas (including dining areas), and have more detailed infrastructure and service solutions. These spaces have provided opportunities for remote or flexible workers to work in a more organized, focused, and productive manner.

The development of the coworking culture has been one of the most significant factors that has enabled a much more flexible workforce, and this has been largely facilitated by technological advances and digitalization. These

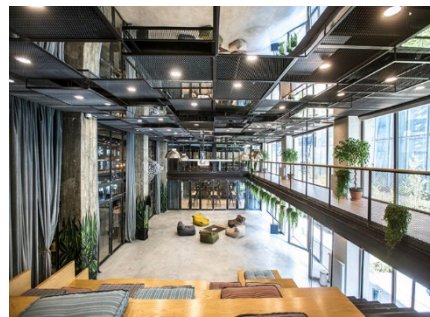
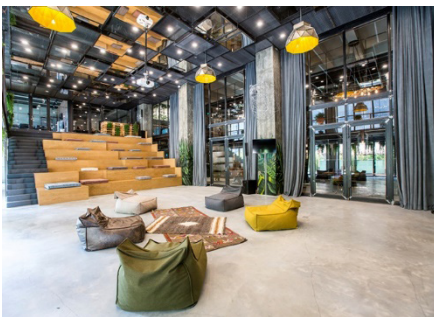
factors have paved the way for a movement towards highly innovative company structures. Coworking spaces have also become part of the work models implemented by most global companies in their company headquarters.

Companies are designing their central offices as shared workspaces and transforming their office spaces into shared workspaces by contracting with companies that provide this service. In addition, by entering into agreements with corporate office companies that offer shared workspace services and have branches all over the world, they also provide their employees with the opportunity to work flexibly and remotely. In short, either central offices (hubs) are designed as shared workspaces according to company policy, or there are corporate office companies with whom they have formed partnerships and rented shared workspace areas outside of the company's central office.



**Figure 3:** Kolektif House Levent Coworking Space

**Source:** (<https://kolektifhouse.co/en/locations/>)



**Figure 4:** Kolektif House Levent Common/ Social Space

**Source:**([www.officelovin.com/2016/](http://www.officelovin.com/2016/))

## 5. THE IMPACT OF GENERATIONS ON OFFICE SPACE ORGANIZATION AND MOBILITY IN HYBRID WORK

With IBM's introduction of personal computers (PC) to users in the 1980s, significant advancements and changes have been made in the design of workspaces and office environments. This has opened the way for substantial investments to be made in office spaces (Erdem Okumuş 2016). The increasing need for office space due to new technological advances and regulations led to significant investments in office spaces in both urban and suburban areas during these years. The growth of knowledge-based jobs and the diversification of office work has led to questioning the designs of office spaces (Dalga, 2007).

Alternative office designs that integrate different types of work have also drawn attention. In jobs that require individuals to work alone or work with others, more diverse work arrangements can be provided by identifying and meeting the needs of individuals, prioritizing the ability to move around in this diversity. The idea that an office is only a single-person space or a desk/chair has begun to be questioned (Budd, 2001). As new work models have evolved from traditional office routines to more interaction-focused collaborative work, concepts such as control over time, space, tools, and information/data have become increasingly important for workers to effectively carry out their tasks. Flexible work hours, efficient use of time and space, utilizing appropriate technology, and building infrastructure, have all become prioritized (Dalga, 2007).

The design of strong office systems equipped with social, collaborative, and technological tools for today and the future has become the preference of not only the Y generation but also the Z generation, who started to enter the workforce. Shared workspaces (Section 4.4) enable advanced use of digital advantages and reveal the potential for the concept of the office to transform into a work area where the "place" where the person is located becomes the workspace. To increase productivity and provide flexible working opportunities for employees with the developing technology of the 21st century, social areas, resting-activity areas, cafe-working areas, etc. have strategically been included in office space organization, which is a reflection of the perspective of Y and Z generations towards offices and work life.

The working culture of the present and future periods has also been influenced by the globalized business world, global management approaches, as well as economic and political developments. In traditional office systems, the working culture has fallen short in terms of productivity and marketing, and there is a failure to adapt to advancing technology. The most important way



to achieve this adaptation is through versatile changes and adapting them to working spaces (Raymond ve Cunliffe, 1997).

Google Istanbul Office (Figure 7-8-9) can be cited as an example of office designs implemented in Turkey in this regard. The design of the office expresses Google's corporate values, work culture, and entrepreneurial spirit, creating an innovative and inspiring, flexible, and timeless environment for employees. The design has aimed to create a contemporary and technological office that combines work with pleasure, creativity, productivity, flexibility, and shared spaces, according to the desires of office users. The concept has drawn on Turkish culture and lifestyle, with work and customer areas designed to be flexible and easily adaptable to functional and business needs, and IT systems designed to enable complete workplace mobility.



**Figure 5:** Google İstanbul Office Cafe Workspace  
**Source:** ([www.arkiv.com.tr](http://www.arkiv.com.tr))



**Figure 6:** Google İstanbul Office Activity-Rest Area  
**Source:** ([www.arkiv.com.tr](http://www.arkiv.com.tr))



**Figure 7:** Google İstanbul Office Workspaces

**Source:** (www.arkiv.com.tr)

The Z generation has developed a tendency towards the hybrid working model, which allows for the use of a third location between home and office as a workspace. Today's technological advancements, such as cloud networks and digital infrastructures, have been at the forefront of the development of the hybrid working system. This working system, which places greater emphasis on more portable and flexible office structures, has allowed individuals to work whenever and wherever they want.

At this point, it is necessary to explain the meaning of mobility and flexible architecture or mobile space, which form the basis of the changing space organizations under the influence of Generation Y and Z.

The concept of mobility generally refers to the movement from one place to another or the transition from one state to another. It signifies fluidity and dynamism. In social sciences, it represents a perspective that describes and interprets the movement of people (migration, individual mobility, travel, transportation), ideas, and the broader social impacts of these movements. Mobility can also be defined as the movement of individuals through social classes, social mobility, or income mobility (Sheller & Urry, 2006).

Flexible architecture is the differential coefficient of various parameters of architecture and society, emerging to serve the diverse needs and requirements of people, society, and the country. Flexible technology in architecture is highly important for modern architects and designers. This prominent ideology is aimed at creating a revolutionary, flexible, encouraging, and livable environment, not as a status symbol (Anas et al., 2017). Mobile and flexible architecture encompasses a design that expands by a person's ideas and imagination, directed by a series of purposes and uses within an environment. Mobile architecture offers significant contributions and sources of inspiration to designers on a global



scale with its characteristics such as lightweight, transience, practicality, portability options, prefabrication, detachable and attachable qualities, dynamism, adaptability, and the mobility of constantly growing structures.

Today's workspace organizations have required spatial flexibility in the design of the building and interior elements, as well as in the work methods to be used depending on the nature of the work (Karaoğlu, 2014). The development of digitization and technology, and the increasing importance of time and speed in terms of global social and cultural factors, have made the flow of information, workforce, and work concepts more dynamic and mobile. Life in all areas has started to flow quickly, highlighting the importance of mobile structures and spaces that provide increasing demand and convenience with innovative benefits that make daily life easier for people.

## **MATERIALS AND METHODS**

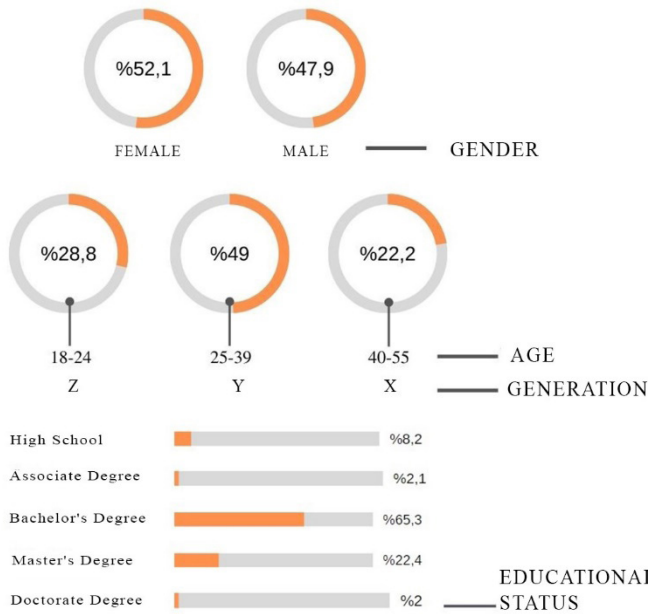
The scope of the study includes the expectations and preferences of individuals from Generation X born between 1965-1979, Generation Y born between 1980-1996, and Generation Z born between 1997-2012 regarding their work life, office space organization, conditions, and interior design. To analyze the expectations and preferences of these generations, a survey was conducted including questions on participants' socio-demographic information, perspectives on the workspace and office concepts, work hours, interior design criteria and approaches of work and office structures, and preferred models of organization.

A survey was conducted on a total of 240 individuals to analyze the expectations of X, Y, and Z generations from the workspaces they use. Due to Covid-19, the survey was conducted online for 182 people, and for the remaining 58 people, it was conducted face-to-face during the period when the pandemic started to return to normal. The answers given by the respondents to the questions about their office/working spaces were graphically analyzed and the data were analyzed and the results were examined with their findings.

## **RESULTS**

According to the graphical distribution of demographic variables from the responses of 240 participants in the survey; it was found that 52.1% of the participants were female and 47.9% were male users. In the evaluation of the age

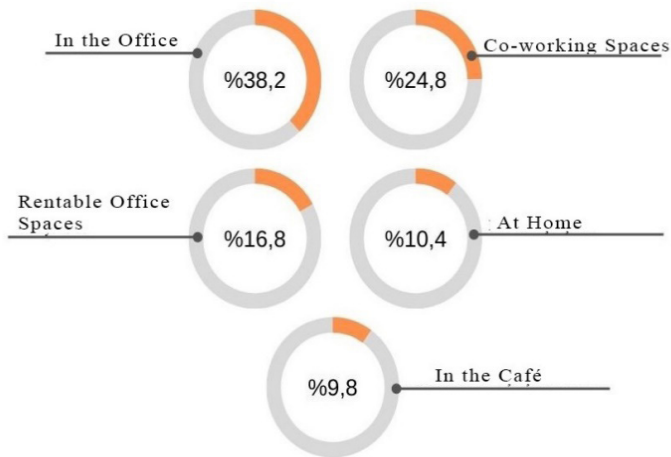
criteria, which is an important factor in defining the generations; it was observed that the 25-34 age group with a rate of 49% constitutes the highest participant group, while the 35-44 age group with a rate of 26.5%, the 18-24 age group with a rate of 12.3%, and the 45-54 age group with a rate of 12.2% also have participants. For educational status, it was seen that 65.3% of the participants had a bachelor's degree, 22.4% had a master's degree, 8.2% had a high school degree, 2.1% had an associate degree, and 2% had a doctorate degree.



**Figure 8:** Participants' Socio-Demographic (Gender-Age-Education) Status Analysis

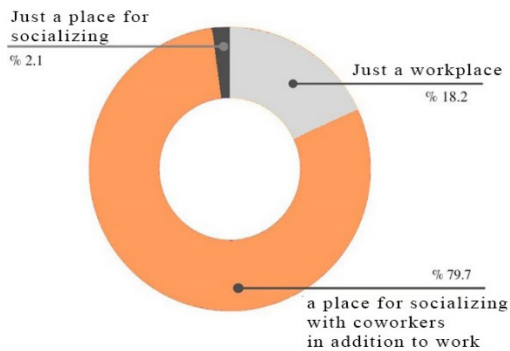
When asked about their industry and job titles, the highest percentage of participants (58.3%) indicated that they were full-time employees. This was followed by 25.8% of participants who identified as managers. 11.9% of participants indicated that they were not currently employed, which could suggest that they were previously employed or have never been employed. 2% of participants reported being students, while the remaining 2% reported being part-time employees.

When participants were asked where they work (figure 9), it was observed that the highest preference with 38.2% was working in an office. This was followed by working in co-working spaces with 24.8%, then working in rentable office spaces with 16.8%, working from home with 10.4%, and working in cafes with 9.8%.



**Figure 9:** Participants' Current Workplace Analysis

Participants were asked about what offices/workspaces meant or could mean for them (figure 10), and it was observed that the answer “a place for socializing with coworkers in addition to work” had the highest rate at 79.7%. The answer “just a workplace” followed this with a rate of 18.2%, and the answer “just a place for socializing” was last with a rate of 2.1%.



**Figure 10:** Participants' Office Concept Analysis



**Figure 11:** Participants' Workplace Expectation Analysis

Participants were asked about what kind of working environment would make them feel more comfortable, and they were asked to make a choice and evaluate their preferences (Figure 11). With this question, it was aimed to obtain more specific information about their psycho-comfort perspectives, after multiple choices were made earlier regarding where they would prefer to work. It was observed that the option “Working in environments that I can customize as I wish and communicate with other people” was the highest preferred response with a rate of 23.6%. It was found that those who prefer to work in co-working spaces with social area facilities and those who prefer to work in their own rooms in the office had an equal rate of 21.8%. The rate of those who prefer to work in a place where they can feel comfortable at home is 11.9%. Users prefer working in co-working spaces where the open office system is available with a rate of 10.9%, while the rate of those who prefer working at home is 7.3%. The rate of those who prefer working in cafes was seen as 2.7%.

When asked if they wanted their work and personal lives to be independent of each other, 76.4% of the participants answered “yes”. 20% of the participants stated that it wouldn't make a difference if they were independent or not. The percentage of participants who did not express any opinion on this issue is 3.6%. The answer “work and personal life should be interdependent” was not selected by the survey participants and its percentage was determined as 0%.

In the analysis of the participants' responses to the question about how their working hours should be or their expectations, it was seen that 23.6% of the participants preferred to work within certain working hours between 09:00-18:00, while 32.7% preferred to determine their working hours according to their own routines. The highest rate was 43.6% of users who wanted their working hours to be flexible and to be determined by their employers or managers.

Participants were asked to select the office structure and workspace options they expect from their current or future employer, workplace, or industry. It was observed that 44.5% of the participants expect their employers to provide both remote and in-office work options. 29.1% of the participants expressed a desire for a hybrid work model that allows them to work from home, central office, and in various locations. The expectation of working in an office building was 19.1%, while only 7.3% of the participants preferred a working model that involves solely remote work.

**Table 1:** Participants' Business Model Organization Expectation Analysis and Distribution by Generation

The office structure and workspace options they expect from their current or future employer, workplace, or industry.	X	Y	Z	Total
The company should only offer work from home.	7,69%	8,33%	0,00%	7,30%
The company should offer the opportunity to work both from home and office	51,54%	37,50%	73,68%	44,50%
The company should offer a hybrid working business model. I should be able to work both at home, in the head office, and the workspace in different locations	23,08%	37,50%	26,32%	29,10%
The company should only offer to work in the office building.	17,69%	16,67%	0,00%	19,10%
Total				100,00%

Participants were asked where they preferred meetings to be held in their office/workplace and the highest percentage 30.9%, chose remote access through video/teleconferencing. It was observed that 27.3% preferred the meeting room in the office, 21.8% preferred the social/activity areas in the office, and 10.9%

preferred a location outside the office. The percentage of participants who did not express an opinion or responded with “it doesn’t matter” was determined as 9.1%.

Participants were asked to rate the importance level of having social areas in their workplace or desired workplace on a scale of 1-5, with 1 being the least important and 5 being the most important. According to the results, 8 participants (6.7%) rated it as first degree (least important), 20 participants (8.3%) as second degree, 48 participants (16.8%) as third degree, 81 participants (33.7%) as fourth degree, and finally, the most preferred fifth degree was selected by 83 participants with a rate of 34.5%.

## CONCLUSION

From the 21st century until today, the world of work, work styles, and office concepts have undergone many changes. Office spaces that vary in usage and have changed due to social, cultural, and historical events and situations have also been affected by the impact of technology and digitalization. The changing definitions and requirements of office and workspaces, the increasing participation of women in the workforce over the historical period, the growing social needs, and technology enabling more flexible work models have led to the differentiation of office interior designs and changes in processes.

The changing perspectives of generations in sociological terms have also resulted in differentiation in work-life and office concepts. The characteristics and situations that led to the classification of generations have also caused differences in individuals’ work styles, perceptions of work and office concepts, office spaces, and working areas. The perspectives of all generations towards work life have changed, and their expectations from the office and working spaces have evolved accordingly. In this regard, it has been determined that the changing socio-cultural structure, economic situation, technological developments, as well as mobility and adaptability are inevitable concepts in life. Mobility refers to the concept of mobile collars, which enables social and work model mobility of individuals who actively participate in the changing work life with technological developments and turn any environment into a workspace, allowing them to work anywhere, anytime.

According to survey data, X, Y, and Z generation employees have seen their offices not only as places where work is done but also as social spaces where they can interact with others. In face-to-face interviews conducted as part of the survey, it was revealed that before the pandemic, there were higher

expectations for remote work, but due to the restrictions imposed during the pandemic, the obligation to work from home disrupted the work-life balance and caused psychological and mental problems among employees. As a result, there has been a significant decrease in the desire to work from home.

After the pandemic, returning to the office has caused concerns among participants about both wasting time and taking risks when using public transportation. Based on the results of the survey, it has been observed that users want to determine their working spaces according to their own preferences. Technological advancements and the necessity of remote working due to the pandemic have shown that people do not need office buildings to work. Furthermore, when the responses of the survey participants were examined, it was seen that strong office systems with social, collaborative, and technological equipment are preferred by both the Y generation, also known as digital nomads, and the Z generation, who are becoming more prominent in the workforce as digital natives.

In this context, a hybrid working model that provides the freedom to work in the desired places, at the desired times, and in the desired ways, which covers the expectations of the mentioned generational individuals regarding their workspaces, has been examined. The inclusive nature of the activity-based working model, the hybrid working method, has been increasingly used during the Covid-19 pandemic. The uncertainties related to returning to work, interior structure of office buildings, changes in work methods and practices due to the pandemic, and the emergence of hybrid work models have been observed as companies start to transition to this new way of working.

The functional, dynamic, and flexible office design approach has been evaluated to transform into a mobilized working space, utilizing the potentials of the digital age and technology to move away from the approach of a workspace-office that crowds and limits people and toward a sustainable environment and work experience where they can feel more free and comfortable.

In conclusion, research and advancing technology demonstrate that the business world is changing. The fast-paced digital age and the close interaction of individuals born in this age with technology indicate that work disciplines are changing, and human resources will be updated digitally in the form of business models. The development of cloud technologies, the increasing use of technological infrastructure in urban spaces, and the growing use of portable smart devices suggest that individuals' opportunities to work whenever and wherever they want will increase significantly.



The changing concept of work, the increasing number of people living in cities and the horizontal expansion of cities, the increasing intensity of work schedules, the importance of time and speed, and the ability of people from anywhere in the world to communicate quickly through technological infrastructure, and the increasing speed of information technology are all thought to increase the need for alternative spaces that provide working opportunities in urban areas. Considering that shortly, not only more space but also mobile, personalized, and responsive environments will be increasingly demanded, it is believed that the increasingly digital lifestyle highlights the importance of hybrid work and mobility in reconnecting with the physical world and other people.

Therefore, discussions can be held with local governments and corporate structures to start establishing and implementing satellite mobile office centers, and all the possibilities of the developing era can be used to facilitate individuals' lives, increase their productivity, and ensure their ergonomics.

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## CHAPTER XI

# PSYCHOACOUSTICS AND MUSICAL DEVELOPMENT IN ENCLOSED SPACES

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### 1. INTRODUCTION

Psychoacoustics is a very old science that has its origins in antiquity. However, it got its name about a hundred years ago. In general terms, it corresponds to the concept of “auditory perception”. Not only in humans, but also in technological devices and animals, auditory perception is examined under the psychoacoustic heading. In this way, it can be examined within the scope of many disciplines.

Since the existence of sound, the reaction of people against it has been examined. These reactions are caused by auditory perception and may differ due to human, space and sound. People react to what they hear. Doğan Kuban explained the artistic perception and reaction as follows: “*No matter what cultural structure a person is in, he has forms and patterns that will affect him.*” (Kuban 1983) Psychoacoustics deals with the classification of responses to sound. It is in the common set of psychology and psychoacoustics to explain the reason for the reaction to sounds, which people have this reaction, and whether the source of the reaction is sound or space or human.

Although the origin of music is not fully known, musical sounds have a history as old as human history (Randel 2003). Music has been in a corner of human history since it was invented. Enthusiastic music provides a sense

of unity, and music used for feelings of sadness and mourning arouses these feelings in many people, and thanks to this, music has been separated from other branches of art. Music is a phenomenon that can cause individual or social reactions that can appeal to conscious and unconscious areas at the same time. Therefore, although the physical wave characteristics are the same, they should be examined separately from other natural sounds.

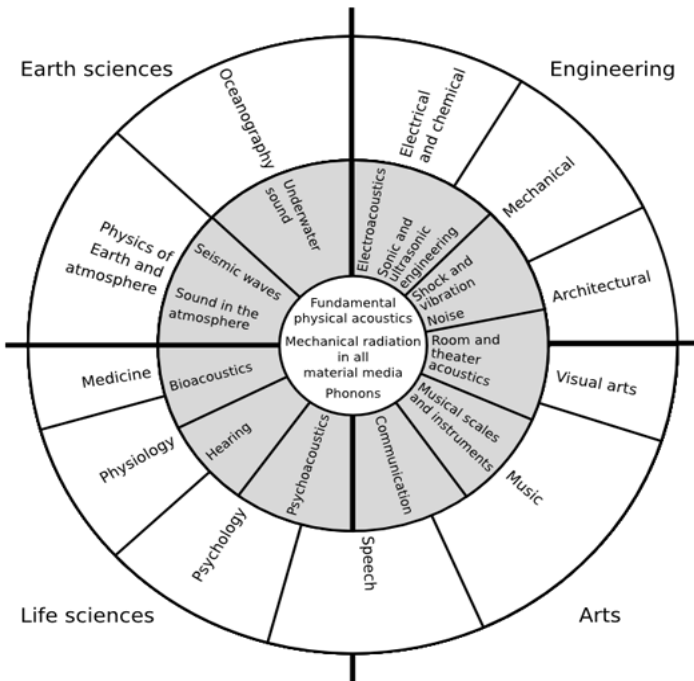
Human auditory perception has provided new data to the science of acoustics. Within the scope of these data, it has been understood that venues for concert purposes need special design. Especially in the last century, acoustic calculations and acoustic planning have been made for these places. Restoration of old dated halls and reconstruction of their acoustic solutions; new halls were planned according to the capacity of the sound type. In short, sound and architecture developed together and positively affected each other. The connection between music, architecture and acoustics is both physical and spiritual. Acousticians, architects and musicians have also worked on this subject. Leo Beranek is one of these acousticians. Throughout his life, he has tried to reveal the hidden data in the field of auditory perception with his many researches in this field (Markham 2014). Thanks to Beranek's work, the concept of "psychoacoustic" occupies a wider place in today's literature.

In this study, the relationship between natural musical sounds and psychoacoustic will be examined and the relationship between them will be evaluated. The importance and place of the concept of "psychoacoustic" in the context of music and architecture will be explained.

## 2. PSYCHOACOUSTIC

Psychoacoustic: It is a branch of science that examines the auditory perception mechanism, the situations affecting perception and the reactions to perception (Ergül 2006). The term "psychoacoustic" is a combination of "philosophy", "psychology" and "acoustics". Both philosophy and psychology have an impact. Psychology (psychology), 19. It has been considered as a branch of science since the 19th century. The origins of psychology are also based on philosophy. Therefore, the meaning can be called "looking at acoustics from a philosophical point of view" or "acoustics of psychological origin". The concept of "psychoacoustic" began to be used in the 20th century. The original version of the concept was born in Latin and did not change much when translated into other languages. In English, it is clearly seen that the concepts of "philosophy", "psychology" and "psychoacoustic" come from similar vocabulary roots.

The experiences we have against the sounds we hear in our daily lives contain information about how we perceive the sound. Our subjective reactions to the world we hear (sound) are explained by psychoacoustics(Ergül 2006). This sound can be natural or artificial. A separate examination should be made for each type of sound. Although sound waves have the same physical structure (sine wave), the response mechanism created in humans against sound is different. The main components of sound are frequency, time and intensity. These form the basis of psychoacoustic science. With the combination of frequency, time and intensity at different levels, serious changes occur in the structure of the sound(Hızalan 2001). Many criteria such as the physical environment in which the voice is transmitted, human physiology, and voice type are effective in the formation of this response. Therefore, psychoacoustics is a multidisciplinary discipline. When the Figure 1 diagram of acoustic branches is examined, psychoacoustics (in the second circle, at 7 o'clock) is located in the intersection of life sciences and art(Lindsay 1966).



**Figure 1: Wheel of Acoustics (Lindsay 1966)**

In ancient Greece, there are philosophers and scientists who have been trained in almost all subjects that most of the arts and sciences of today have

been studied. In this way, discussions and studies on multidisciplinary issues have been able to reach more clear or limited results. Philosophy is a science almost as old as human history. Although the exact date of release is not known, it is possible to reach the information that it exists even in the writings from the prehistoric period. Since almost all sounds, including music, were studied in Ancient Greece, it is thought that psychoacoustic and psychomusicology may have originated. Therefore, since the first studies and meaningful criticisms of psychoacoustics and psychomusicology were made in Ancient Greece, the history of the emergence of these branches of science in some sources is about M. Approximately 500 is accepted. The Greek philosopher Pythagoras studied the harmony of musical sounds. The methods applied by Pythagoras are very similar to the methods used in modern music (Blauert 2005).

Philosophy and music have long lived in the dark ages (except for religious music) and are on the verge of oblivion. After the Baroque period, music was liberated again and a rapid development process was experienced. When music reached a certain saturation and was based on the rules accepted by a wide audience, the effect of sound on people began to be considered. With this period, research on music and perception began to be examined in different fields. The transformation of psychoacoustics into its current form begins with studies on volume acoustics in the early 1900s. Volume acoustics (sub-branch of Architectural Acoustics) deals with the distribution of sound in a space. Contrary to popular belief, this distribution is made not only by objective and calculable parameters, but also by considering human perception and physiological requirements. Studies on human auditory perception can be examined under many different disciplines such as philosophy, psychology, medicine (audiometry and ear, nose, throat), physiology, physics, engineering (computer, electricity), instrument knowledge and architecture. Psychoacoustics is a relatively new field within acoustic fields. It has not developed as much as other areas, so there is a lot of work being done. Within the scope of psychoacoustics, both individual and social studies are carried out. Psychophysical experiments and statistical methods are widely used in this field (Zhang 2008). Today, it is also used in psychoacoustic coding and voice recognition systems (Gümüş 2020). Studies on how much the natural human voice (speech voice) can undergo a change and deceive voice recognition systems are called “psychoacoustic masking”. There are also extensive studies on forensic research and product development (Kurakin, Goodfellow, and Bengio 2018).



Psychoacoustics also has an important place in acoustic archaeology. Acoustic archaeology is the uncovering of how a historical time was heard. In acoustic archaeology, there is no conclusive evidence as in classical archaeology. However, considering that the main elements of an event are time and space, acoustic archaeology can provide more information about past civilizations and people. For the revival of most historical times (only sound environment or both visual and auditory environment), visuals of that period (photography, painting), historical texts written at that time, urban legends, literary works, compositions are used. Taking into account the physical environment of the historical time to be revived, the sound landscape of that place is created with the emotions felt by people. The high number of written and oral texts will ensure that the results are more realistic. Acoustic archaeology is a field that can provide more information about historical buildings (mostly churches, cathedrals), ancient societies and traditions, ancient music(Azevedo, Markham, and Wall 2013).

There are many studies on voice perception. Various researches have been conducted on the formation of different emotions in musical sounds according to note and instrument tones and whether these emotions are individual or social. In the speech voice, the tone of voice and the way the spoken syllables come out of the mouth have a different effect on people. For this reason, auditory perception information is also given within the scope of effective speaking skills. Instruments are also included in the study area of psychoacoustics. The intervals in which the instruments can be played, their frequency values, the distance their sounds can reach, the way they are played, the type of instrument in the music or the instrument family are effective factors on auditory perception. The sound from an instrument has many component tones of various frequencies and is called a complex tone. The tone of the lowest frequency is called the basic tone, and the other tones are called the upper tones(Zhang 2008). The concept of “Tonal Quality” comes from here. Tonal quality is one of the subjective perception criteria of musical sounds and is an important design parameter for both acousticians and musicians(Beranek 1962).

In the 21st century, the concept of “Psychoacoustic” is still not gathered under a single roof and can be examined under different disciplines according to continents or countries. For example, in the United Kingdom, it is predominantly studied in the field of “philosophy”, while in the United States it is predominantly researched within the scope of “architecture” and acoustics, and in Japan it is predominantly researched within the scope of “architecture” and “computer and electrical engineering”.

### *2.1. The Effect of Psychoacoustics on Architectural Acoustic Planning*

In volume acoustics, the concept of “psychoacoustic” is used to hear the sound in the environment in the best way without losing the health of the human ear. Pain threshold, speech sound and musical sound clarity parameter are planned with psychoacoustic consideration of maximum and minimum noise levels for different spaces. The first evaluation of psychoacoustics in the context of architectural acoustics was made in the 1940s (Beranek 1987). Leo L. Beranek, Leslie L. Doelle is one of several acousticians who have published their research on this subject (Long 2006). In the following years, many studies were conducted on the comparison of psychoacoustics with volume acoustic data and the development of existing calculation methods. Psychoacoustic criteria were especially emphasized in listening venues (concert and opera halls, auditorium). Although the psychoacoustics of musicians and acousticians are known, Beranek thought that they were insufficient to tell each other their ideas about the acoustics of an auditorium because they could not create a common language. For this purpose, in his book “Music, Acoustics & Architecture” published in 1962, he wrote about the subjective criteria in musical sounds (Beranek 1962). Musical criteria have increased or changed over time (Long 2006). However, subjective clear criteria for speaking voice have not yet been established. For this reason, while objective and subjective criteria are considered in a hall designed for musical sounds, mainly objective criteria are considered in a hall designed for speech sound.

Optimum acoustic conditions are achieved by combining objective and subjective criteria in musical venues. After determining the conditions, decisions such as appropriate plan, material (durability life), number of listeners, volume size, stage width are made (Diri 2003). In other words, although psychoacoustic data only expresses perception at the micro level, it plays a role in macro-level architectural design until the determination of the type of material.

## **3. MUSIC**

Music has a history as old as human history. It can be defined as the sound cluster formed by the harmonics and regular vibrations that are physically in the human auditory range. It is the whole state of sounds that appeal to emotions and senses. The music is very loud, consists of different instruments and has the ability to accommodate a wide spectrum and numerous rhythms thanks to its appeal to different societies. It has a much more flexible structure than speech

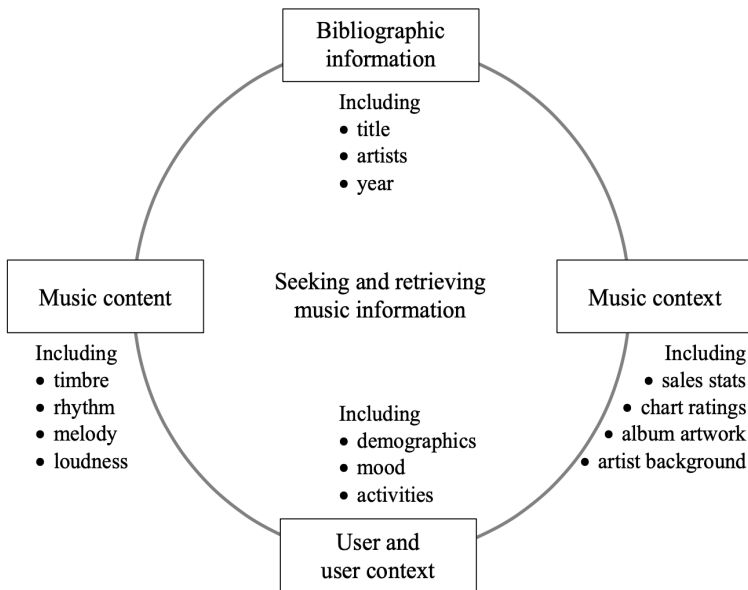
sound. It may consist of long and short sounds(Barron 2009). Speech sound is usually in the range of 80 – 100 Hz and its power is about 10 microwatts, while musical sounds have a fairly wide frequency range. The sound power of the instruments can vary between 5 microwatts and 70 watts(Everest 2001).

Music has a very wide range of vibrations. The vibration creates the rhythm. Rhythm diversity occurs both with the spacing and occupancy between the notes in the music and with the difference in the tonal scale between the instruments. The composer determines which one will be used where and how in the musical composition. The balanced and harmonious composition of the rhythms and the transitions suitable for the ear structure between the rhythms constitute the basic components of the sound quality of the music(Tarcan 1978).

According to Charles Darwin (based on the evolutionary hypothesis), music was inspired by the behavior of birds courting the female, and the foundations of speech are in music. The earliest origins of music date back to the African continent. The rhythms of nature (such as the sound of the footsteps while walking, the sound of the horse running, the sound of the cows and oxen, the sound of the birds singing, the sound of the waves hitting the shore, the sound of the dry branches hitting the shore, the sound of the seeds of the dried fruits shaking like pumpkin mangoes and similar) led to the emergence of the foundations of music(Say 1997). In ancient human societies, music was sometimes used as a reminder of religion, sacred ceremonies, and sometimes competition, and sometimes unity and togetherness. For example: Eskimo singing competitions were created to prove which tribe was superior and justified when intertribal disputes arose(Taylor 2018).

Throughout history, music has been influenced by various political, social and religious events. Since it is a branch of art that develops with people, it has developed rapidly in the periods when the vast majority of people have reached freedom. In times when music could be played freely, musicians and listeners believed that it was a gift given to them(Copland 1952). Thanks to its unifying feature, it has ensured the expression of individual and social feelings. Instruments and human voice are the basic building blocks of music and have been studied together within the scope of musicology. Culture is an important guide in the formation of music. Musical curtains can be used in different frequencies and repetitions within the scope of culture. This difference gives rise to culture-specific music(Howard and Angus 2006). Musical curtains can be created with instruments or with a human voice.

Today, music is developing both in terms of genre and technique. Thanks to technological possibilities, new tones could be obtained, and music was composed using different instruments and notations. When we look at both the history of music and the development process of today's music (studies about today's music), it is seen that music is integrated with human beings. Music is a branch of art that develops together with the listener. The musician is influenced by the feelings and thoughts he sees around him. In other words, the listener affects the music, and the music affects the listener. In this context, in a study conducted by Morten Hertzum and Pia Borlund in 2017, the information that can be obtained about the musical experience was gathered under these four general headings: bibliographic, music content, music context and user context. In this study, the listeners evaluated today's modern music. Figure 2 In, what the four titles (experiential knowledge) required to know about music cover and their relationships with each other are given(Hertzum and Borlund 2017) Although the result obtained Figure 2 in is specific to modern music, it proves the continuous cycle between human and music.



**Figure 2:** Seeking and Retrieving Music Information (Hertzum and Borlund 2017)

The music hall can also influence the music. The differences between the halls can be compared with the performance of music by the same orchestra in

different halls. Similarly, when different music is performed in the same hall, a comparison can be made about the music. How much the sound is reflected and swallowed according to frequency ranges is planned with architectural acoustics. It is impossible to think of music performed in opera halls independently of acoustics. There is a very strong connection between music and the hall where it is performed. It can affect the sound maturity, sincerity and timbre of an acoustic music(Beranek 1962).

### ***3.1. Perception of Musical Sounds***

Musical sounds can be perceived differently according to different frequency values (octave bands) and instruments. The ability to distinguish the sounds of instruments: acoustic pressure is associated with differences in the detailed shape of waveforms. This is because the acoustic pressure changes (sound waves) produced by a musical instrument hitting the eardrum of the listener are responsible for the vibration pattern established on the basilar membrane (eardrum) of that ear(Howard and Angus 2006). Although the sounds produced by the instruments are in the form of sine waves, the vibration patterns may differ. Therefore, when we listen to music holistically, we hear different shaped sine waves moving on the same wave normal (timeline). Depending on the tones of the instruments, the effect of the whole music on the listener may vary. Since some composers knew this situation, they designed their own instruments according to their own music or modified the instruments according to their music. These examples are especially encountered in the 18th-19th centuries.

Musical perception is a subject that is studied almost everywhere where people and music exist. The perception of both musical genres and instruments used in music and the human voice in music is investigated. Human auditory perception is considered a multidimensional problem consisting of complex components(Bech and Zacharov 2006). Although the perceived (before the reaction was formed, heard) and the heard are similar, they are usually not the same(Arayıcı 2018) .This is where the difficulty of systematizing perception comes from. Perception occurs when a number of objective and subjective events occur in sequence. Cüneyt Diri about his perception of music: “*Experiencing music is possible by perceiving music. We can briefly describe the perception of music as: organizing and interpreting the data reaching the brain in clusters and making sense of it through a filter in previously learned patterns*(Diri 2008). ” So far, studies have aimed to fully understand the working mechanism of

human auditory perception or to reveal details that may mislead human auditory perception. Although people are informed about the tones and melodies that affect their social or individual consciousness and emotional states, the working mechanism of human auditory perception has not been fully confirmed.

Music preferences are also directly related to musical perception. Music is a phenomenon that shapes the individual and the individual shapes the music. Features such as rhythm, pitch, tone are effective in selecting the music to be listened to. These parameters affect the type of music (Makris and Mullet 2003). Studies so far have shown that people's personalities, intelligence and emotional reactions can be affected by music preference (Song 2016). The aforementioned studies were examined in music, psychology, philosophy intersection. Some of the results: Extroverted behavior is associated with popular rock music, while country and Western music are associated with the act of "thinking (Pearson and Dollinger 2004)." Individuals who preferred music with high rhythm tended to be more energetic (Gosling, Rentfrow, and Swann Jr 2003).

#### **4. HISTORICAL DEVELOPMENT OF MUSIC**

In acoustic science, the musical periods in the Baroque Age and afterwards, which are accepted to have originated from the origins of modern music, are examined. The types of music after the Baroque are compatible with today's hall and stage typologies in terms of instrument play, notation, rhythm and mode prominence. There are certain patterns and rules for music after Baroque. With these in mind, first special spaces of music art and then special spaces of music genres were designed. Although this situation progresses similarly today, the biggest distinction is observed between opera and orchestra halls.

##### ***4.1. Ancient Period (B. C. 650 - A. D. 400)***

Musicologists and anthropologists agree that the human voice is much older than music. According to this judgment, the first song was born from melodies made with the human voice. Over time, in order to enrich this sound further, the easiest sounding instruments (instruments) were made from the materials they could reach the most easily. Various non-aesthetic tones have been created to get to know nature with these tools made of bones, tree bark, horns or stones. After maturing for a certain period of time, the tones began to be derived by various combinations between the sounds produced by the human instruments and the human voice, which wanted more. Sachs wrote: "*Man, who wants to give his*

*voice a regular shape, has found two different, or rather two opposing, ways of expression: one is the logogenic way in which words dominate, in which sound is used as a mere end. It is music that is very little dependent on other words, that is overflowing, that comes from within, that arises by leaving anger and tension unattended. We call it pathogenic, the music of enthusiasm(Sachs 1965).”*

Most of the origins of the universal human culture dating back to our time were laid down in Ancient Greece. Today, the cradle of philosophy, science, art and music is considered Ancient Greek. Ancient Greece reached the peak of its civilization at that time according to the processing and evaluation of various sciences, arts and knowledge it received from the east. Greek civilization saw music as a goal for feelings such as communication, unity, and togetherness. For this reason, they have tried to examine and develop music both within themselves and in other branches of art and science. For music in Ancient Greece, Sachs said: *“The study of the rules of music was really at the forefront. Philosophers, scholars, mathematicians, historians all participated in this work separately; the material and spiritual aspects of music were the subject of scholarly research and debate. So is the physical aspect of sound and its acoustic information. The Greeks found that the sound consisted of vibrations. It is known that it was discovered around 500 BC by Pindar’s teacher, Lasos of Hermion. A century later, Arhitas of Tarentum revealed that there are two kinds of vibrations: the permanent waves inside the larynx or instrument, the developed and global waves that allow these waves to reach the human ear through the air. Aristoxenos of Tarentum, Aristotle’s disciple, pioneered the rules of rhythm and melody (not all of which have survived). These are the greatest theories we have inherited from ancient music. Greek melodies have disappeared, but all science writings are based on Greek teachings. Including musicology writings of the Middle Ages. The medieval theory of interval proportions based on string knitting, eight Byzantine Echoi, eight Western Church offices, numeral, alphabet letters used for the names of the notes are all taken from the Greeks. The information that led the learned priests of the Middle Ages to lay the foundations of Western music is mostly information from ancient Greece(Sachs 1965).”* The sources we have on Greek music show that most of them are hymns dedicated to the gods. The order in which these hymns are written and possibly played depends both on the size of the god and on the composition of the music as a whole. In ancient Greece, music was played in front of communities as much as people were interested in it. While those who performed music in public (singing or playing instruments) were usually slaves, the Greek people performed their own music



to listen to music among themselves (for example, in the house). Music was a part of everyday life. Apart from these, it has also been associated with music theater in Greece. In fact, the process has gone so far that acoustic arrangements have been made in amphitheaters so that music and theater can be exhibited. These arrangements in amphitheaters are the first living examples of acoustic effect in architecture. In the writings of Vitruvius at that time, natural resonators were used in amphitheaters and these resonators were designed and placed to work according to musical notes. Today, the remains of these resonators have been found only in an amphitheater in Israel. These resonators have been rebuilt with different materials throughout history and used in different buildings. For this reason, Greek civilization both established the basic standards of music and created the first and basic examples of its relationship with other branches of art. One of the most prominent features of ancient Greece on music is the music system they developed. The Greek music system is a consistent, concrete, scientific system compared to other First Age civilizations. For this reason, the foundation of Western Music was laid in Ancient Greece. Not only Western music, but also Christian music (church music) has its roots in Greek modes. Renaissance period polyphony and most of today's European origin songs are based on Greek fashion(Say 1997).

Especially after the Renaissance, Palestrina, Byrd, Bach and Haendel reflected the Greek influence in their uncertain works. In one of Beethoven's last quartets, Adagio in Lydian mode (La Minor op. 132) There are breezes of Greek modals. Contemporary composers conduct research on Greek Fashion and its origins by examining these works based on the same common ancestor. Since Greek Fashion forms the basis of polyphony, it is correct to say that Greek civilization contributed to all the music that has survived to the present day. At the same time, the Greeks took the knowledge and units of other societies and systematized them, developed the instruments of that period and increased their number. For example, they arranged the mod (maqam) number of the lyre they learned from Egypt and laid the foundation of the harp in my day. The harp has a wide range of octave bands. It can be adapted to almost any melody and can be used in almost all songs. The development of Barbiton, an instrument from the Lyre family, was also in Greece. Barbiton can be expressed as a small, handheld miniature version of the Lyre, an instrument that was usually available in almost every home for the background music of poems at that time. These three instruments were described as instruments of both gods and people in Greece(Say 1997).

The Roman Empire was born as a continuation of Greek civilization. However, the Roman period has progressed in many areas, including art and science, like the repetition of the previous few centuries. The Romans remained like the students of the Greeks, especially in the field of philosophy. The intellectual and artistic life of the Romans is generally based on pleasure and entertainment. In this period, Greek music modes were taken and used exactly, the instruments were made more ornate, and music became an entertainment tool instead of a goal. In this context, ethnomusicologists interpret that “Roman music made Greek music exhausted and fond.” However, blowing instruments were further developed during the Roman period. It is thought that wars and campaigns had an effect on this development(Say 1997).

#### ***4.2. Medieval Period***

Early Middle Ages: The transformation of moral power from polytheism to monotheism has been effective in many issues, especially in social life. Music is also one of the areas where it is effective. Medieval music begins with Christian church music. The religious influence prevails in the part of M. S. that lasted until the 10th century. During this period, the rise of the Roman Empire continued, then the empire was divided into two, choral music was developed, Gregorian Music (Hymn) was developed. In this period, the main blowing and stringed instruments of the Ancient Period were banned on the grounds that it was a pagan instrument. These prohibitions were strictly enforced until the 8th century, and the development of these instruments did not take place until the 14th century. Church hymns are essentially based on Greek modes. The maximal and rhythmic system was taken from the Hellenistic period. Pope Gregory (Gregory the Great, 540- 604 AD) banned non-religious music. He decided that it was right to play music in its unpretentious, simple and plain form only in churches. He tried to guarantee the loyalty of people to the church and to ensure that the unity between them was only around the church. During his pontificate, he rearranged religious melodies. This new set of rules, called the “Antiphonaire,” is tied to the altar of the Church of Saint-Pierre in Rome with a gold chain (which still stands today). The music prepared according to the new order was played and sung in rituals. These original music were called “chant gregorien” (Gregorian Chants). The only and main purpose of music is expressed by “one church with one music”. Gregorian music soon spread throughout Europe (mainly England). Different sects were also influenced by the integrative religious structure of this music and accepted religion as music(Say 1997).

The Middle Ages were a time when music was in the dark. Although music genres in the Middle Ages were divided into more than one subdivision while being studied in musicology, it is a generally suppressed period. The differences between the sub-periods are almost non-existent. For this reason, the names of the sub-periods are also named in the same way as the history of art.

Romanesque Period (800 – 1100): The process of religious suppression of music, which lasted about seven hundred years, began to change with the influence of rich Europeans (nobles). This period between the 10th and 13th centuries in Europe is the turning point where the foundations of polyphony were laid. The biggest difference of the Romanesque period is the development of permanent music writings. In almost every period of music history, written processes related to music have taken place. However, these writings were usually written in a way that small communities could understand among themselves and were far from a form that large audiences could understand. In the Romanesque period, music was compared to other branches of art. Especially the fact that plastic arts are made of objects that can be shaped like paint gypsum mud stone and thus can be exhibited for a long time has led to the evaluation of music art as discrete. Since music is an art that exists with time rather than space, it has become a need for music information to be written and played at different times and in different places. Music writing was born from this requirement and was known as Neuma after Boetius' letter writing in the Middle Ages. Neumas are the signs placed on the words to show the ups and downs of the melody. These signs only show the rhythm of the melody, the loudness and intervals of the sounds are not specified (Say 1997).

Gothic Period (1100 – 1400): This period represents the rise of Christianity in philosophy and art. Rapprochement with the people through travelers is a feature of this period. During this period, Arab philosophy was studied and interpreted by Christians, which was called the Aristotelian movement. Aristotelianism played an important role in the rise of scholastic thought. As a result, the understanding of gothic art made the Romanesque Period older and rude. The Gothic churches were called the "Celestial Church" and the churches of the previous period were called the "Earth Church" (Roth 2014). This new architectural understanding led to the creation of stone and glass structures that the world had never seen before. A similar effect led to subtlety in thought, art and music. In this period, especially thanks to German and French travelers and poets, folk songs were derived. Since ancient times, some known string instruments (oud and the like) have gradually begun to be introduced into Europe

from Spain, but they have not fully adapted to Western music. The freedom and prevalence achieved by non-religious music brought the understanding of division in two as well as the understanding of triple division, and the use of small values, which were revolutionary in music writing, began to be used within wide limits. The change in duration patterns positively affected polyphony, and polyphonic formats were generally called “Discantus”. Polyphony also affected the organum type, and the transition from the primitive organum to the advanced organum was made. The most advanced form of my organ in the Gothic period is the mote seen in the 13th century. Motet includes different rhythms and lyrics under the influence of polyphony. The last period of Gothic is the 14th century. This century has been described as “painful” by historians. As well as the pains of rebirth (the Renaissance), it also tells about the great troubles experienced by European society. In Europe, the Hundred Years’ War has come to an end and the plague epidemic, which has devastated large masses, is nearing its end. Christian medieval states began to disintegrate into national states. Urbanization and urban awareness brought with it the new economic order. The new way of life and the view of life of the bourgeoisie class have led to an increase in detachments from the church. In line with the developments, the development of polyphonic music has been paved. Art has come to tell the realities of the earth and the human being. Nature and landscape paintings have increased, folk songs and diversity have increased, and names have started to be written on the portraits. In the face of all these developments, the church resisted with all its might and tried to prevent these works of art from poisoning people as much as possible. However, the church tried to prevent those who were distant from it while supporting the artists who were close to it despite revealing the same works by showing biased behavior. For example, Phillippe de Vitry, the clergyman and greatest poet of the period, was one of the pioneers of the “Ars Nova” (new art, new technique) movement in France, although he was known for the immutability of the church authorities. This term is used to describe the emerging style of music. The composers of the 14th century made the motet shift out of religion because they did not look at religious music warmly. During this period, especially the Italian “ars nova” music was not only audio music, but various instruments accompanied the songs. In religious music, the real sound was the human voice, and the instruments accompanied only this sound. In music, the transition from the horizontal and polyphonic writing of the Early Middle Ages to a new understanding of vertical harmonic music, which is much more advanced and complex, has taken place. Since the 14th century, the

emergence and development of keyboard instruments have also supported the developments in music. Until the Bach era, all songs written for the Northern Org for four centuries were played with stringed keyboard instruments. Before the end of this century, organs with two keyboards and standing keyboards emerged. In addition, organ-specific solo buttons appeared for the first time in this process. Other instruments were also developed, and instead of making monochrome sounds, mixed flutes and trumpets were developed. The emergence of standing instruments in the same period shows the special importance given by composers to the field of thick sounds, as in all moving instruments. The first half of the 15th century was the period of transition to the Renaissance. Especially the first 50 years do not fully represent Renaissance Music. In the Renaissance, European culture changed fundamentally in every field. While new views in art and science were developing rapidly, the first foundations were laid for developments in economic and political structure. In the 15th century, there were important developments for music writing (notation). Between the 13th and 15th centuries, it was called the “Black Mensural Notation”. In the 15th century, the second phase of “Measured Notation” called “White Measured Notation” was started. On the other hand, the development of keyboard instruments continued. However, the layout of the black and white keys and the sounds they make are not fully organized, so the use of these instruments is not fully widespread(Say 1997).

### ***4.3. Renaissance Period (1400 – 1600)***

Renaissance means the fading of the old as well as the flourishing of new forces in thought, science and art. It is the basis for the formation of today’s European culture. It is a rebirth in almost every sense. It is the bridge between the two discrete ages of Europe (the Middle Ages and the New Age). The resumption of ancient studies, the evaluation of the results of the First Age and the Middle Ages, and the reorganization of all social life with a new perspective were ensured. The Renaissance movement took place thanks to the peoples that were the continuation of Western Rome, and the Eastern Roman (Byzantine) peoples were not effective in this process. While the main source of medieval thought was religion, Renaissance thought was placed on the basis of reason and experiment. Representatives of the Middle Ages were clergy, while representatives of the Renaissance were scientists and thinkers. In the Renaissance, the Ancient Period was handled and examined through human beings. Studies and discussions have been carried out on the place and essence

of man in the world, and as a result, “Humanism” movement has emerged. The 15th century art was shaped by human contact. In this period, the human body and soul were examined more deeply in both fine arts and science. Thanks to the discovery of perspective and the development of compositions, paintings have been brought closer to the human gaze. The fact that Leonardo Da Vinci did not believe in any facts other than his own work during this period caused him to conduct many experiments. The results of his experiments and studies have been carefully hidden by his students, and many of them have survived to the present day. Thanks to Da Vinci’s preparation of visuals of human anatomy and physiology, his explanation of the proportions and dimensions of the human body and his explanation of them to Europeans, human figures in visual arts began to be made more realistic. According to Sachs, Renaissance music meant the resurrection of the old. Especially the reconstruction of ancient Greek and Roman forms has been encountered very frequently(Sachs 1965). In Renaissance music, there are many vocalizations from the north (of Dutch origin). Ockeghem, one of the composers of the period, wrote works that can be evaluated in the mastery category even today in terms of harmony and counterpoint. Another important feature of this period music is that the polyphonic fiction was structured based on simple and similar similar similarities. At the end of the century, the motet underwent radical changes, non-religious phrases that looked like they were patched into the motet were thrown and returned to their original state(Say 1997).

Music, like art, is in preparation for the Renaissance. It is uniform and calm, adhering to rules, free from enthusiasm and creativity, and under religious pressure. It is aimed to bring the mystical understanding to light. There is not much noise at this time. The “dignity” pressure of religion has manifested itself in music. It was believed that religious music should be exhibited with a human voice, so church choirs became important. Kleman of Alexandria said of music: “We need only one instrument, the glorious word of love and prayer. Not harps, drums, pipes and whistles. ” This period was dark not only in terms of music but also for instruments. Instruments are shredded, cut, cracked. However, in this period, some local artists in Italy made their folk tunes very loud thanks to instruments(Say 1997).

In Renaissance Music, the Peak lived between 1560 and 1600. The last period of the Renaissance both enabled the exhibition of the most advanced versions of artworks and laid the foundations of the Baroque style. During the 16th century, the Renaissance spread outside of Italy, producing the most

important works of human history in the fields of thought, science and art throughout Europe. The most important centers of the art movement were Dutch, England, France, Germany and Spain. Palestrina, Orlando Di Lassus and Byrd were pioneers of music(Say 1997).

There is also an example of a structure shaping music in the late Renaissance period. Designed for the Gregorian hymns and built between 530 and 549, the palace church Saint Martin (four equal arms, in the form of a Greek cross), the harsh reflective elements (glass and mosaic) on its inner surface caused the sound to burn very echo. Choral conductors of the church, especially Giovanni Gabrielli, developed a new technique to ensure that music spreads properly within the church and does not disturb the tonal balance. This technique was later developed by J. It was used by many German composers, including S. Bach(Roth 2014).

The birth of opera took place between 1570 and 1610. Opera: It is a branch of art that takes its roots from theater and music (two separate branches of art). The opera bears traces of literature, poetry and plastic arts. The establishment of the “Academy of Poetry and Music” in Paris, the emergence of classicalism (neo-classicism) in the field of poetry and painting in Florence, the treatment of art with the philosophy of nature, the developing worldview and sense of life thanks to the Renaissance prepared a suitable ground for the birth of the opera. In the second half of the 16th century, it became a very vocal tool. It has been observed that the use of words and music together with the famous philosophy of nature is more effective than the use of individual words. The first insights into how stage music should be and the opera’s principle examples are physicist and astronomer Galileo Galilei’s father Vincenzo Galilei, poet Rinuccini, singer and composer J. The fairy was introduced by the composer G. Caccini, Emilio de Cavalieri. The operas composed in the first half of the 1600s were composed of bass-weighted, occasionally cut with songs. The orchestra is positioned in the stage performance area, not in the stage pit. In later examples, poetic sections, drama, rhythm, instrument variety, and dynamic dances were added to the opera. Until the second half of the 18th century, harpsichord, organ, lute and harp were used predominantly in Opera. Opera has been a thriving art for centuries under the leadership of Italian musicians. Other European countries came from behind Italy(Say 1997).

#### ***4.4. Baroque Period (1600 – 1750)***

Baroque is a process that spans nearly fifty years in the history of art. It has also had an impact on arts such as painting, sculpture and architecture. It



means “crooked pearl” in Portuguese. It is a condescending term used by critics to emphasize that the 17th-century trend is ridiculous. The Baroque era is a very important period for the art of music. For this era, Riemann used the phrase: “*Baroque is the age of continuous bass,*” while Handschin used the phrase: “It is the *age of concert style.*” During this period, music was considered a part of palace art. Rousseau (1767) and Koch (1802) summarized it with a close definition: “*Baroque music reflects the climb in the science of harmony, the increase in dissonance, the further weight gain of melody, and the importance of ornamental understanding*(Michels 1994; Say 1997).” In the early 1600s, two clear distinctions were made for music: “Stile Antico” and “Stile Moderno”. Ancient style refers to the polyphony that is satisfied with counterpoint games; modern style refers to the use of new varieties such as rich melody, orientation to harmony, and opera. Baroque is a sensibility effort that reflects the aesthetic understanding of the nobles between the Renaissance and the Classical Period. From now on, it is aimed that art meets the appreciation of nobles. With the discovery of the American continent and colonial activities, the peoples of Europe have scorched their economic freedom. The “Royal Sovereignty” model has emerged. Baroque art was primarily directed to serving the wishes of the kingdoms and the papacy. In Baroque art: Emotional impression of the beauty of beings is at the forefront, their observations are examined in subtle detail. Because it appeals to nobles, there is a fondness for vanity and propriety, exaggerated forms are used, and mastery in craftsmanship and art is emphasized. The sense of taste from life is often processed. However, in contrast to all these, the theme of death and the fact that man is a tiny particle in the universe (sense of nothingness) are also processed. However, since the supporter of this movement was the wealthy nobility, nothing that did not suit their taste was included in science and art. The fact that Galileo had to deny his works and that the famous philosopher Descartes hid his works from the nobles for two years can be shown as an example(Say 1997).

Italy dominated the music scene of Europe in the 17th century. The foundations of this were laid in the 16th century and the process continued from the middle of the 16th century to the end of the 18th century. Venice became one of the most famous music centers in Europe, while Florence experienced its golden age in music until the early 17th century and Naples until the 18th century. Famous composers of the period such as Gesualdo, Frescobaldi, Banchieri rewrote the old styles with new melodies and harmonies. During the same period, Andrea Gabrieli’s nephew Giovanni Gabrieli wrote a special

sonata in 1597 for two instruments that he constantly used when composing with the awareness of the use of sounds forte (strong) and piano (light): “*Sonata Pian e Forte*”. This sonata has a different significance in the history of music: the understanding of the orchestra of that day is much more primitive than it is today, the choice of instrument does not depend on the structure and mood of the piece. The musician who played the instrument whose pieces were found, that instrument was played. In this sonnet, however, Gabrieli wrote a zink (or cornette) and three trombones especially for the first ensemble, and a viola and three trombones for the second ensemble. This formed the basis of the orchestra. Since the idea of continuous bass gained importance in the Baroque period, the importance of thick sound instruments increased. Schreiber first invented the trombone and then the contract. Bass instruments and stringed instruments developed during this period. Gasparo da Salo and Giovanni Paolo Magnini developed the violin(Say 1997).

In the 17th century, music writing (notation) began to approach its current state. However, it has not yet achieved international language proficiency. In the mid-17th century, there were two major musical developments: the first was the emergence of oratorio and cantata, and the second was the formation of opera’s own artistic identity. Oratorio is the form of opera that is still under the influence of religion and its origin is based on religious plays in the classical period. In Venice, the first public opera house was put into service, so that only the art for the palace was made accessible to everyone. In the opera, sopralos came to the fore and arias gained weight. Triads, ariosos (great arias), duos (duos) and terzettos (trios) have been designed to bring music to the forefront and operas have entered a new phase. Threshold instrumental music was called “concerto” by the Italians. With the development of solo parts in which the only instrument in the concerto stands out and is played skillfully (especially the violin), the canzona parts in the song have also made progress. Thus, the concerto was moved to a more advanced level in Italy than being a canzona concerto in the last years of the 17th century. “Lied” is a genre of music that has developed under the name of German nationalism since the Renaissance, with a predominance of arias and melodies. Although it was known to have developed with a similar effect in England in the mid-17th century, German culture prevailed(Say 1997).

In the last quarter of the 17th century, Baroque music spread throughout Europe. This development, led by the Italians, reached its peak in France, England and Germany. During this period, with more emphasis on stage performances,

sound and music were pushed to the background and the Venetian opera ended. In Naples, however, a new stage of opera art was introduced. The orchestra and chamber music of instrumental music has undergone radical changes and has approached its current state. He developed sonata and concerto in Italy, opera in France and Germany, and opera and instrumental music in England. Baroque, which is essentially palace music, started to take to the streets at the end of the 17th century. Public opera houses and private halls where concerts are held have come to the fore. In fact, the director of the Royal Band of London has started giving public concerts. During this period, professional musicians met with the public. In this way, the people were brought closer to the art of music. The first public concerts were held towards the end of the 17th century. Public concerts increased in the 18th century(Say 1997).

The Venetian Opera, which had an important place in the development of the opera, fell towards the end of the 17th century. Music and poetry were thrown into the background, and stage performances gained importance. During this period, Naples and Roman operas developed together and were enriched in terms of both rhythm and performance. However, mainly arias were used in Naples opera. So much so that at that time the opera of Naples was called “aria bundle”. Purcell, one of the most famous artists of the period in England, gave quite successful works by adapting Italian music to British culture. In France, Lully’s operas have opened the horizon for future symphony orchestras. In the 17th century, instrumental music had a more complex and richer rhythm than in previous periods. The vast majority of instruments were reconsidered and improved during this period. Strings are the first type of instrument that the public encourages. (Thanks to public concerts in England). The blowers were developed by the Italians and French thanks to Lully’s frequent use in opera and orchestra. The horn, clarinet, oboe, viola, cello have been renewed in terms of both their size and sound. In keyboard instruments, the division of an octave (octet) into 12 equal intervals and its finalization in 12 major and 12 minor tones by gaining a mathematical order were realized with the contribution of Johann Sebastian Bach. This process of evolution, which Bach put at the end, has been discussed for centuries(Say 1997).

Baroque is palace art that reflects the taste of nobles. However, by the 18th century, Baroque came out of the palace. The art of the 18th century is a softened version of the strict rules of nobility. At the core of this understanding of art, there is an “understanding of art for art”. In the history of architecture, this period is called “Rococo”. Rokokon’s equivalent in music is “Style Grand”.

Rococo is the art of the bourgeoisie and the aristocracy. Since this section had the idea that art could only progress when it reached large masses, the concert halls and mansions in this period were not built by the king or the state, but by the art protectors of the bourgeois section. These halls, where music will be performed, were built with interior and exterior decorations and intense use of color in order to represent not only the audience but also the whole of other branches of art. Although the period from the 17th century to the first half of the 18th century was called the “Baroque” period, the understanding of art between the Baroque and Rococo is significantly different. In Rococo, color and expression differences were preferred to the prominent and solid line of the Baroque period, and sentimentality came to the fore. Rococo preserved the Baroque patterns. There are no profound differences in meaning between the two understandings of art, but the tendency towards sentimentality and naturalness reached its political peak with the French Revolution and its artistic goal with Classicism. In this way, the understanding of art that prevailed in Europe at the end of the 18th century generally reflects the taste of the bourgeoisie. The artistic aims of the Renaissance could only be realized thanks to Rococo. Artistic expressions can now be displayed naturally and realistically. The erasure of Baroque art became evident in 1720(Say 1997).

Johann Sebastian Bach, known as the Great Bach, is a member of a family that has been training musicians for centuries. In the history of music, Bach is said to have said: “One of their faces is a mirror turned to the past and the other to the future.” Bach helped Luther reach the apex of Germany in music. J. S. Bach created music through polyphonic forms in polyphony. Polyphonic and counterpoint forms, which were neglected for a long time in the classical period, were reconsidered in the Romantic period. Bach left almost all kinds of works of that era except opera. In his orchestral works, he revised some instruments to fit the music. Some of these instruments were even named after Bach. In the 18th century, music advanced to an international level and became universal. Nation consciousness in music has been replaced by musical forms and rhythms. For example: Handel, a German citizen, composed Italian opera for the British. Antonio Vivaldi is one of the greatest composers of his time. In fact, the meaning and expression of his works were reconsidered in the 20th century. The French and Germans followed the Italians in order to follow the developments in music, and Vivaldi’s works were followed the most. Vivaldi was a young musician who mastered violin lessons from his father (his father was a Venetian violinist). Vivaldi’s concertos have an important place in the history of music(Say 1997).

#### *4.5. Classical Period (Classicism) (1750 – 1825)*

It is the period from about 1750 to 1820. Haydn is the time period during which Mozart and Beethoven's great symphonies were published (Beranek 1962). The French Revolution, which took place towards the end of the century, led to the emergence and spread of new ideas in science and art. The Enlightenment was liberated from adherence to religions and traditions and depended on people's personal intellect and foresight. Developments in natural sciences have paved the way for the development of culture with reason. Rococo, which ruled in the first half of the century, lost its importance. Culture and art pioneering has moved from the noble class to the middle class. Thus, there was strong opposition to the Baroque-Rococo tradition. With this new attitude, J. S. Bach and some of the musicians of the same period were also outdated and their works were forgotten for a while. The French Revolution, as in the Renaissance, increased the interest in historical depictions and heroism, especially in painting. Because the French Revolutionaries saw themselves as resurrected Greeks and Romans. As a result, Greek and Roman influences emerged in science and art, and the "classicalization movement" (classicism) began. This process, which is reflected in almost every field of art, has also shown its effect in music. In music: Baroque and Rococo's detailed and decorative music has been simplified, and care has been taken to ensure that the sound of the instruments is clear and simple. Fancy instruments were simplified and music was presented in plain forms. As a result, the composers tried to express their feelings by creating dramatic effects in music. These processes paved the way for the standardization of music, the number of musicians increased, and paid concerts began to be given to the public. Music has become a commercial goal. Although it is good for many segments of the public to be able to relate to music in terms of welfare, there have been serious problems in the quality of music and musicians since everyone who has a musical instrument in their hands thinks that they can make music. Some musicians and composers are depressed because of the situation in which the music has fallen. The concept of "real artist" has emerged and serious distinctions have begun to be made between musicians and composers. While in previous centuries a musician could play more than one instrument and take over the orchestra when necessary, in this period every musician became an expert in an instrument and no musician was seen as knowledgeable enough to replace the conductor. A concert group was formed that appealed to the middle class. The number of compositions made for the public in music is more than

those made for art. The works composed by ordering have decreased, the works expressing personal feelings and interpreting the thoughts of the public have increased. Since these works are thought to be immortal, the artists composed their works for longer periods of time and produced less works than the artists before them. For example: Haydn has more than 100 symphonies, while Mozart has half as many as Beethoven and nine symphonies (Say 1997).

One of the first artists of Classicalism in the art of opera was Gluck. Gluck helped develop the “natural and simple” understanding of opera. Sudden and unexpected use of arias has been removed from real life and emotions as it has a dramatic effect. The intellectuals in France discussed this process of development of the opera. The famous thinkers of the period: Diderot, Holbach, Rameau and Rousseau were in favor of the composers’ ranks in this regard. Italian and French operas were seen as rivals. However, both Italian and French operas are divided into subdivisions within themselves. Even Italy’s serious opera (Opera Seria) and light opera (Opera Buffa, Italian Comic Opera) have divided public opinion. Serious opera fans saw the light opera as a side play, and the light opera fans found the serious opera boring. The German musical genre lied has also been revised to be an interpreter of public opinion. The Lieds included a longing for simplicity and naturalness, but there was a period of “wise dryness” according to Sachs, as he could not get away from his original origins (Sachs 1965). According to the artists of the period, the simplicity and naturalness underlying the lies are so subtle that even children can understand them, and so deep that only a sage can understand them. A development that supports this: some (Say 1997) liars have been converted into children’s songs and published.

One of the most distinctive features of the classical age is the new forms that have developed in music. Music in non-classical form: It has a dynamic, dialectical and optimal balance against the static form of the Baroque. Classicalization of existing forms in music has been ensured. Classical forms, sonata, string quartet and symphony have taken their present form. Emmanuel Bach, J. S. He was the eldest son of Bach and lived in Berlin for a long time, serving German opera and art. He has a far greater reputation than his father. He composed many church and chamber music. Christian Bach is E. He is Bach’s younger brother. He received his composing education from his brother. C. Bach focused on public concerts. E. Bach and C. Bach played an important role in determining the musical structure of early classicalism. In this music structure, symmetry, motif repetition and dynamic contrasts are included. Sonata is the

most prominent type of music in the early classical period. During this period, the instruments also developed rapidly. Special playing techniques have started to be created especially for keyboard, blowing instruments (Say 1997). During this period, the people came together more frequently with orchestras and operas, which led to the opening of large concert halls open to the public in the next century (Beranek 1962).

#### ***4.6. Romantic Period (1825 – 1900)***

In the Romantic era, social events have become particularly important in the political sphere. Therefore, the developments in thought and art are in competition with each other. New trends such as materialism, naturalism and realism have emerged. These movements are especially dominant in the field of literature, but in a short time, other branches of art, especially painting, were also affected by this. Intellectual themes were at the basis of the trends that emerged as an option for romance. The basis of Romanticism based on Hegel and Schelling philosophy has begun to be examined because it is not sufficiently compatible with natural sciences and mathematics. In music, on the other hand, the emphasis on elegance and certain rules has been replaced by a unique characteristic structure that expresses personal excitement. Composers such as Schubert, Mendelson, Brahms, Waagner, Tchaikowski, Richard Strauss, Ravel, Debussy are the most important names of the period. The works of these composers also occupy a large area in today's orchestral repertoire. In terms of both instrumental and rhythm, the development process of the orchestra started with Haydn. After Haydn, each composer revised the orchestra in his own way, making changes to the sound and size of the orchestra. However, as a result of the overgrowth of the orchestra and the mixing of instrument sounds, it was noticed that the listeners had difficulty in distinguishing the sounds. For the solution, the contrast of the orchestra was increased, the solo parts were simplified in the works, and the orchestral parts were designed with more complex melodies. Some composers faded the melodies enough to destroy them, using only melodies where they would be emphasized (Beranek 1962). The parts of the piece that will be emphasized are determined according to both the composition and the purpose of the composition. The accents made by some composers have taken their place in the history of music as a trace of their own. For example, Tchaikowski made the emphasis with sudden changes in an intense melody and timbre. These sudden changes are his signature. In Romantic period music, long echoes (reflected sound) were requested. The ratio of reflected sound to direct



sound is low. For this reason, for the first time in this period, music specific to the hall began to be composed. For example: Wagner composed Parsifal, Berlioz Rökem for Bayreuth Festpielhaus, for Les Invalides(Beranek 1962). Some composers have gone beyond that and designed special halls or special stage areas for their own music. Wagner designed both the “Wagner Orchestra Piti” and a special hall for his operas(Parkin and Humphreys 1969). Designed by Otto Brückwald and Carl Brandt over Wagner’s drafts, this hall is located in Bayreut: Festspielhaus (Festival Hall)(Roth 2014).The Wagner orchestra pit is staggered, unlike other orchestra pits. While the conductor’s orchestra management continues, the audience can see the entire orchestra. In addition, the fact that the orchestra pie was cascaded enabled more instruments to fit on the stage than the normal pit orchestra(Burris-Meyer and Cole 1964).

With the influence of the Industrial Revolution, there was a decline in handicrafts, and as a result, the criterion of “fine workmanship” in artistic appreciation fell into the background. Rough and cheap products have started to emerge in many fields of art. In the field of music, this situation has manifested itself with the spread of light music and dance music. The influence of common music on large audiences has begun to be interpreted as an “epidemic of appreciation”. During this period, opera was also softened and operas were institutionalized. Music historians consider Late Romanticism as “recollection, synthesis creation.” Because Liszt’s symphonic poems pioneered the development of orchestral music, Verdi breathed new life into the Italian Opera. Wagner worked on a musical genre that would bring a breath of fresh air to opera art, despite the likes of ordinary opera lovers. Another symbol created by Late Romanticism is Brahms: With a rich musical expression, he emphasized the values of the classical period’s understanding of form and brought romantic sensitivity to its peak. While the late romance continued in the last quarter of the 19th century, the movements exceeding this were in the history of music. Although French opera and ballet music did not develop much compared to the previous century, it attracted considerable attention. The art of ballet, which developed throughout the 19th century, surpassed the forms of waltzes and polka by skipping four or five episodes instead of three, and turned into a real dance show that integrated with music. Music designed for concert purposes was used as ballet music. Italian opera, on the other hand, remained under the influence of realism and naturalism movements in this period. In almost every country in Europe, the realism movement began to spread and had a great impact on music. Puccini, Mahler and Hugo Wolf are the most important composers of the last

period of Romanticism. In the Americas, artistic development took place later than in Europe due to independence movements. The first American composer in history was Stephan Collins Foster, who lived from 1826 to 1869. In the history of music, there is information about the late Romanticism movement in America(Say 1997).

In addition, acoustic planning was made in a concert hall for the first time in this period. The Stadt Casino Basel (Switzerland) was completed in 1776. It is a turning point in the history of acoustics. In this rectangular plan type hall, which is one of the best acoustic performance types for musical sounds even today, the side walls and ceiling plane are arranged in a sound-reflective and absorbing way. Following this example, many halls were built in the late 18th and early 19th centuries(Long 2006).

#### *4.7. 20th Century Modern Period*

New music is a non-tonal period in the history of music, breaking all ties with the “tonal music” that has been used for 300 years. The 20th century is the age of change in science, technology and social life. In this context, creative, scientific and technological leaps have been made in art. The concept of “New Music” is a concept used for different movements that emerged in almost every period in the history of music. Ars nova (in the Middle Ages) in the 1320s, Ars nova (in the Renaissance) in the 1430s, Musica nuova around 1600, new music in the 1750s, new direction in the 1820s were called “New Music” for that period. However, until the 20th century in the history of music, no music movement had ever been so disconnected. In addition, the new music of the 20th century is a movement that includes many different types of music. In the music of the 20th century, discordant sounds come to the fore. Aesthetics in this period: based on realism rather than beautiful and harmonious. Incompatible sounds were used due to aesthetic understanding. An attitude against “dreamism” was displayed against his sentimentality, and the realism movement prevailed. Modern art has also been called “ugly art” because reality is ugly and imagination is beautiful. Vivid colors in the art of painting, exaggerated and enthusiastic drawing techniques have been abandoned. The beautiful details in the picture have been replaced by more realistic elements and places that can be encountered in daily life. Melody and tonal richness in music and imaginative concepts in literature have been replaced by realistic, simple and colorless elements. Many composers used a pure harmonic structure and tone coldness against the sentimentality of romance, thus cutting off all connection with the sentimental music of the 19th

century. Stravinsky, Schönberg and Hindemith are some of them. Minor and major scales of tonal harmony were not used in music. Instead of tonal scales, pentatonic sequences, churches and far eastern authorities, ancient authorities (Greek modes) were preferred. Rhythm was used as an auxiliary element in melody and Harmonia as in ancient music. The dynamism of the 20th century and the music of the speed of daily life were conveyed, and no measurement lines were needed. The movements of the 20th century set the composer free in terms of very rhythmism. The concept of “timbre” has come to be used for all natural and artificial sounds, leaving only the definition of human or instrumental sound. 20th century composers were influenced by different movements. It is wrong to evaluate the composers of this period within a single movement. It is possible to collect the movements and styles of the first half of the 20th century under headings such as Expressionism, Neo-Classicism and Futurism. Post-1950 trends were named as: Sequential Music, Electronic Music, Aleotic, Late-Serial music, Post-Modern music. During this period, countries came to the fore with their own musicians(Say 1997).

Since the 1880s, going to concerts in Europe and America has become a routine activity for the vast majority of people. In the Americas, especially after the Second World War, interest in the concert increased considerably. 20th-century concert music has a very diverse structure. Some of the compositions were emulated and others tried to add the new possibilities offered by the changing world to the music. For this reason, modern music cannot be described with certain patterns. As a result, the halls had to be designed according to multiple music and the interest in acoustics increased(Beranek 1962). Although acoustics continued to be evaluated at the intersection of art and science in the 20th century, it was accepted as a branch of science. Over time, it was subdivided into sub-branches and common areas of study were determined with other disciplines.

## 5. EVALUATION AND CONCLUSION

Psychoacoustics was born with Greek philosophy, but psychoacoustics has also been forgotten due to the fact that other music, like art branches, could not develop under pressure. Thanks to the return to philosophy and nature in the classical period (Classicism), issues that have not seen the light of day for centuries have started to be discussed again. One of them is undoubtedly psychoacoustic. Thanks to the reduction of music to a level that can be reached by the public and the full realization of freedom of thought, psychoacoustic (auditory perception) has begun to be re-examined. Since then, music has

also developed psychoacoustically. Psychoacoustics is a science that exists everywhere there is sound.

Considering the historical development of music, it has shown a development process that started later than most art branches. The most important reason for this is the compositional feature of music. Rather than other branches of art, the art of music has the power to unite small sections of the population (for example, peasants) and the upper sections of the nobility (bourgeois). With the realization of this feature, non-religious music was banned by Christianity. Centuries later, with the re-emergence of music, its unifying effect re-emerged and music showed a rapid development process. Although Roman and Gothic Art was inspired by the 12th century, we do not have detailed information about the music of these ages. Among the reasons for this are that music writing did not have certain rules at that time, religious oppression was still very intense, and the majority of the people did not have individual and economic freedom. The Renaissance is the time period when the light of hope reappears for the branches of art. Music developed later than other branches of art and lived through the dark ages, including the Renaissance Period. Both instruments, musical genres and notation could not have a certain language and could not develop regularly. Music began to gain universal quality only after it spread at the popular level. Therefore, in terms of acoustic science, music has been studied in the period from Baroque to the present day.

The Baroque period is a period of great progress in the history of music after the great awakening. For the first time in centuries, music has developed so radically in terms of both technique and design. Different types of music emerged, the instruments were renewed and restored, the sound artists were divided into categories, and the basic rules of notation began to be determined. The first accepted examples in the art of music emerged in the 17th century. In these years, while the Baroque movement dominated in art (architecture, painting and sculpture), music experienced its first era called Pre-Classical. This era reached its peak with Johann Sebastian Bach and the classical era for music began. Bach's masters were Mozart and Hayn. With the loss of the power of baroque art, thanks to the advancement of Rococo art understanding by nobles outside the palace, art became independent from the palace and the state, and thus an environment where music can develop freely was created. With the classical period, music emerged from the closed spaces of the palace and spread to the concert halls accessible to all segments of the public. The most important feature of the classical period is that the pioneering in art has

moved from the noble class to the popular class. Since art has descended to the level of the people, it has developed more freely. In my classics, music was completely liberated and developed rapidly. Instruments were developed during this period. In fact, these can be considered the prototype of the most frequently used instruments today. The classical period of music ended with Ludwig Van Beethoven and the Romantic Age (Romantic School) began. Romantic School is the period when works that are frequently listened to and exhibited are given even today. It is a period in which individual emotions come to the fore and music is included from the richest to the poorest of the people. In this period, the development of music in every sense has been in front of the eyes of thousands of people. The Romantic School ended in the 19th century with Richard Wagner. Wagner made the transition to the genre that is today's universal music and later called "Modern". With the beginning of electroacoustic studies, the use of electrical energy with music started with the absence of a sharp distinction between currents in this period.

The historical development of music has also influenced architecture. Over time, it has shaped spaces and enabled spaces to be built for music. When the history of music is examined by considering the types of music and instruments, the positive interaction between them is clearly seen. A similar interaction took place between psychoacoustic and music. Whenever music developed formally or semantically, questions about the perception of music also emerged. David Howard and James Angus: *"Each harmonic is a sine wave and since the hearing system analyzes sounds in terms of their frequency components it turns out to be highly instructive in terms of understanding how to analyze and synthesize periodic sounds, as well as being central to the development of western musical harmony."* (Howard and Angus 2006)

Although the scope of psychoacoustics is much more than music, the tonal and physical richness of the music distinguishes it from other natural sounds. Music is a phenomenon that affects and shapes both human and space and is effective in a large part of human life that cannot be denied. As can be clearly seen in the history of music, the same effect continues in today's music. In conclusion: To specialize in psychoacoustics or any of the musical disciplines, one must also have knowledge of the other field. The studies that have been and will be carried out in both areas should be examined and followed up. In addition, values such as human physiology and culture that may affect music and auditory perception should also be considered. Psychoacoustics is a discipline that can only be understood with such a multidisciplinary approach.

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## CHAPTER XII

# THE TECHNOLOGICAL POTENTIAL OF NATURAL SYSTEMS: INTERIOR DESIGN SOLUTIONS

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### 1. Introduction

Designers have always looked to nature for their design ideas. These ideas (applied or inspired) can be found in every age of architecture, such as Gaudi's structures mimicking tree trunks in La Sagrada Familia or Calatrava's Turning Torso in Malmö mimicking human body structure. The designers have considered the potential of natural systems, their structural behaviours, materials, forms, and the interrelation of the systems with their environment. However, there is too much to discover and evaluate.

There are several aims which define the general structure of this chapter. The first explains the importance of getting inspiration from nature for sustainable designs in interiors. There are various fields in interior architecture where all these inspirations can be applicable. The second aim is to discuss the application methods and design approaches. On the other hand, sustainability is another interior design issue deeply connected with natural systems and their design potential, which makes this another aim. The third aim, in this case, is the discussion of the sustainable design approach. The final objective is to enable designers to gain the ability to find sustainable and ecological solutions to design problems. Lastly, this chapter aims to clarify the technological potential of natural systems and their benefits for solving interior design issues.

Following the aims listed above, the scope of the chapter is based on specifically selected natural systems and their technological potential. In this sense, technological potential means the ability and capability of biological

systems that could affect how we design, live, study, work, connect with others and relate to the external world. Technology is an important field with a high potential to save the earth, and it can protect nature with the newly developing systems. However, we must learn how to live and value nature more than improving technology (Lambertini, 2018). On the other hand, considering that nature has millions of different types of systems, only five groups of organisms have been selected with various design potentials. The chapter field has been limited to organisms from the ocean; diatoms and dinoflagellates, aerial organisms; owls and ploceus known as weaver birds, and from the land; beavers, ginkgo, and sequoia.

The chapter is based on the literature review and analysis of the technological potential of the selected organisms. The reason for selecting these organisms is specific; they have functions that could help innovate interior architectural solutions. They have technological potential (having high design skills, effectiveness, and scientific and industrial capability of inspiring design solutions in interior architecture).

Seeking solutions in nature thrives on better design ideas with a high potential for designing healthy interiors. The study not only aims to guide designers who are interested in designs inspired by nature but also to raise awareness about sustainable design.

## **2. Natural systems and technology**

It is essential to understand the high design potential of natural systems, which is critical to be used in the technological processes of architecture. Mimicking biological principles of functions in technology has come to a fundamental level. Mimicking also contributes to improving the architectural design. If technology develops with the help of natural systems, then the capability of architectural design aiming for sustainable solutions increases. Combining natural systems and their potential with technology has two sections. The first section questions the natural system, and the second examines the technological potential and its relationship with nature.

### *Natural systems*

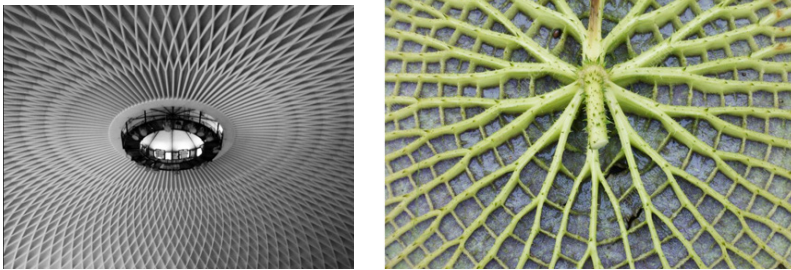
Most of the challenges have their solutions in nature. However, only a few designers know the potential of natural systems. Thus, designers should apply nature as a mentor, measure and model (AskNature, 2020).

What is a natural system? Why is it essential in design? Although answers to these two questions are extensive, a particular and basic explanation is given. A natural system, or in other words, biological principle, basically defines the functional strategies of an organism or ecosystem. For example, one of the biological strategies of a coral reef is to heal itself after the strike of a significant disaster because this healing will provide a continuity of the ecosystem in the reef colony. The Great Barrier Reef embodies more than four thousand kinds of coral, coral cays, and other species, including six hundred continental islands (Yasa, 2022). When a disaster happens, all species provide emergency help to store the reef (AskNature, 2021). This kind of help shows a unique and strong collaboration of symbiotic life in the ocean. Another natural system is the one that has a strong relationship with architecture, buildings of animals such as anthills, bird nests or beaver lodges (Gruber, 2011, p. 185). All these structures are very dynamic and strong in terms of overcoming environmental conditions and other unexpected situations. Apart from these examples, organic forms such as eggshells, nests and caves represent the need for security and safety (Gruber, 2011, p. 57). The geometry of nature has always been the primary inspiration source for design. Thus, the geometry of nature is also counted as a broad range of natural systems.

Besides knowing natural systems, it is essential to follow guiding instructions to find natural systems and understand their strategies. It is important to love and respect nature; this will motivate more to discover more. Learning biology is one of the crucial starts. Biology is the study of life, our lives, nature, organisms in the sea, in the air, organisms that are not visible, and so forth. Biology seeks to understand the forms and strategies that cover all living and non-living natural things (Mazzoleni, 2013, p. 40). These forms and strategies are defined as natural systems. They have the technological potential which guides designers to innovate sustainable designs. Thus, these designers should follow design approaches to find natural systems and their strategies.

*Biomimicry* is a major scientific field that can guide designers for nature's forms, processes, and ecosystems (Biomimicry Institute, 2021). With the help of biology and biomimicry, finding natural systems and understanding their strategies for further design steps is straightforward. For example, it was discovered with the help of biomimicry that nature's chemical combinations can help us to design sustainable foams and plastics. In addition, Australia's native ecosystems can prove that we can build factories that function like forests (Biomimicry Institute, 2021). This information is essential because transferring

ideas from living organisms is very sensible; natural models have been through evolution and faced many conditions, and now they know how to deal with them (Gruber, 2011, p. 15). Pier Luigi Nervi is one of the most inspiring structural engineers that look to natural systems for stiffening. He studied Amazon Waterlily (*Victoria amazonica*) and got the inspiration for designing a large roof spanning without columns on top of the Palazzetto dello Sport (figure1) (Pawlyn, 2011, p. 14).



**Figure 1.** Left: Palazzetto dello Sport, Rome.

**Right:** Amazon waterlily.

**Reference:** L(Cutri, 2021), R(Sciencephoto, 2021)

### *Technological potential*

According to explanations from some dictionaries, the technological word means “something related to or associated with technology”, and *potential* means “someone or something is capable of developing into a particular kind of person or thing” (Collins Dictionary, 2023). This results in an understandable meaning of specific processes or abilities of systems that can evolve into a further stage. Thus, natural systems can generate technological potentials, which could significantly impact developing prospective designs. However, today’s technological improvements are mainly built to control nature to meet human needs rather than underlining sustainable designs (Mazzoleni, 2013, p. 4). On the other hand, the technological potential is becoming the main engine of progress in creating sustainable designs. Therefore, the natural systems are the fundamentals of this progress.

There is a scientific field that helps to reconnect nature and considers it as a mentor, biomimicry. It guides designers to reveal and benefit the technological potential of organisms. Biomimicry is the field of science that guides designers for unique design inspirations and innovations from nature. Biologist Janine Benyus defined nature’s mentorship in her book *Biomimicry Innovation Inspired*

by Nature (1998) that nature tends to make the best possible use of everything but is within the limits of this optimization (Benyus, 1998, p. 7). It means that nature knows and builds what functions best in the most optimized way.

However, technology must be used on a nanoscale to reveal these potentials, such as Darkling beetles' method of harvesting water from the atmosphere for collecting and drinking water or the tensile strength of spider webs for a resilient structure. Even though technology is part of a designer's design tool, it must be enriched with the help of natural systems and their technological potential. For example, instead of using an assembly of some morphological combinations of natural systems, it is better to use specific strategies and functions of that organism to inspire the design idea. These strategies lead designers to uncover technological potential.

The elegant perfection of living organisms constantly has amazed designers; from Da Vinci to today's modernist high-tech designers like Calatrava, they used natural systems' potentials and design strategies. Calatrava, for example, mainly gets inspiration from animal biology. He practiced zoomorphism, which helped him to understand the technological potential of organisms he was interested in. His designs clearly show that he focused on biomorphic principles that mimic natural systems' morphological strategies (Makharia, 2020). For example, Lyon-Saint Exupery Airport Railway Station resembles a bird's skeleton and wings. Calatrava mainly used the resemblance and zoomorphism of animals.



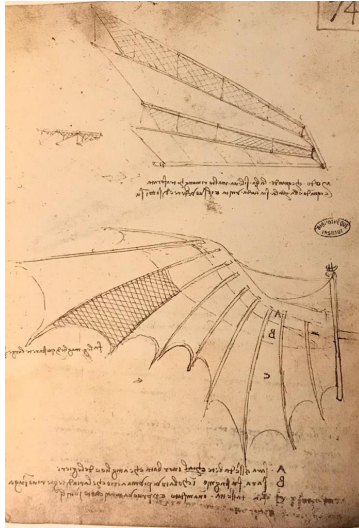
**Figure 2.** Lyon-Saint Exupery Airport Railway Station

**Reference:** (Calatrava.ch)

On the other hand, Da Vinci used flying strategies and the anatomy of birds and bats in his flying machine design. Leonardo noted how birds steer their flight, diving, ascending and descending manoeuvres (Nathan & Zöllner, 2014, p. 682).



These manoeuvres can be defined as the technological potential of bird wings for Leonardo's design strategies (figure 3). The feather system of birds was the most potential design idea for which Leonardo got inspiration. They were the lightest and most flexible of the whole wing system.



**Figure 3.** Studies of wing articulation, 1487-1490.

**Resource:** (Nathan & Zöllner, 2014:682).

In summary, natural systems and their potential profoundly affect architectural designs. However, the relationship between nature and architecture has always been limited yet inspirational. Nevertheless, with the help of the biomimetic design approach, this limitation is no longer a problem. Designers must learn to use this approach to understand natural organisms and reveal their technological potential.

Not only designers of the built environment but also today's technology should use these natural potentials. Considering 21st-century technological improvements, designing sustainable environments is very much possible. But this combination of natural potential and technology would succeed tremendously in designing better and lifelong designs.

## **2. Nature's design systems and their relation to interior design solutions**

Many designs in architecture coincide with the discourse of "form follows function", which is accepted as one of the essential teachings of architecture. This

teaching is still taught in architectural education (Karabetça, 2018). The same logic is integrated into the natural formations. Nature has fundamental design principles for survival. One of them is the function which leads to bioadaptation. Bioadaptation is an essential design process; it forces designers to consider the adaptation-function-sustainability trilogy while researching a natural system. The adaptation process is the ability to adjust to different formations of the organism; the function is the purpose(s) of the organism, and sustainability is directly related to the ability of an organism and its function to affect the natural adaptation process (Karabetça, 2018).

The function is an important concept with every definition, but the physical definition of function also depends on form. It is possible to see the most suitable examples for this definition in nature; For example, the location of a termite mound determines its shape and enables the termites to set up the indoor air conditioning system according to this form. It is possible to see such bio-functional features in all-natural organisms and ecosystems. Only some critical designs have been made to transfer this feature to the design and the related space. Mick Pearce, the East Gate building, and Grimshaw Architecture, with the Eden Project, are pioneers in bioadaptation (Karabetça, 2018). With the help of the functional abilities of selected organisms, technology was able to power up architects' design ideas in both projects. It is essential to match today's technological possibilities with the design potentials of the natural system.

### ***2.1. Innovative ideas***

Innovative design ideas can be evolved with the biomimetic design approach. Innovative and solution-oriented designs can be obtained by combining the properties of more than one organism suitable for design problems. Based on biomimicry, it is inevitable that natural, continuously recyclable, economical, ergonomic, structurally resilient, durable, aesthetic, ecologic and sustainable designs can be created (Karabetça, 2016, p. 158). However, as mentioned before, instead of mimicking the formation of the organism, it is always better to understand and apply the functional principles of that organism.

Thus, one of the important design principles of biomimicry is “focusing on the function”, which points to two fundamental differences between buildings; buildings that look like a form in nature and buildings that do as nature does to improve functional performance. The leaves curling outward in the Corinthian column in Art Nouveau, the winged seed motif in Frank Lloyd Wright's Samara House, and Gehry's fish and Calatrava's bird in recent history can be given as

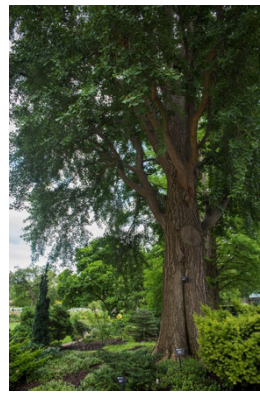
examples of the use of nature as a form. On the other hand, sound insulation material inspired by the feathers of the snow owl and hygienic covering material inspired by shark skin can be given as examples for focusing on the function of the selected organisms (Karabetça, 2016, p. 39). In this section, four different organisms have been analysed based on their technological potentials. New conceptual ideas for interior architectural design solutions are aimed to reveal based on these natural systems.

### 2.1.1. Trees: *Ginkgo and Sequoia*

In nature, everything is functional to each other. Every organism supports the other with a symbiotic relationship or form and function. For example, trees shed their leaves to the ground to prepare themselves for harsh winter conditions and to create nutrition for microorganisms and fungi in the subsurface. This interaction could lead designers to develop better solutions to create better environments (Karabetça, 2020, p. 898). Trees are significant organisms in the forests, known as the largest ecosystems. Two important tree species in these ecosystems have significant design potentials: ginkgo biloba and sequoias (Figures 4a and 4b).



**Figure 4a.** Sequoia



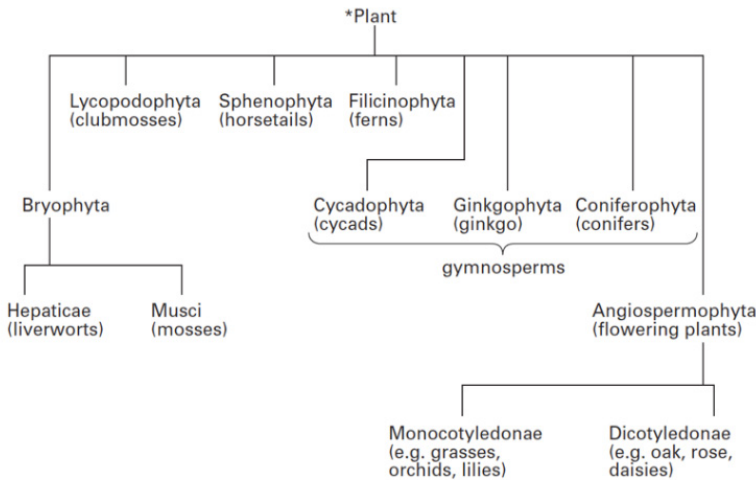
**Figure 4b.** Ginkgo Biloba

**Resource:** (Plants.ces.ncsu.edu)

In the “Facts on File Dictionary of Biology”, the only tree which does not represent any other species, Ginkgo Biloba, is described as follows: “A genus comprising only one species, *G. biloba* (maidenhair tree), this being the sole representative of the phylum Ginkgophyta. It is a deciduous, dioecious tree with fan-shaped leaves and motile male sperms, native to the Far East.” (Hine, 2005:156).

Ginkgo is one of the oldest living trees in the world, and in the plant kingdom, it is the only existing species in Ginkgophyta taxonomic group (table 1) (Özen & Biricik, 2012, p. 517).

**Table 1.** The Plant Kingdom



\*Extinct and mostly extinct groups are excluded

**Resource:** (Hine, 2005, p. 401)

It is fundamental to understand the natural system and its strategies. Ginkgo, in this sense, is very complicated. It has essential functions. Firstly, it has no varieties (subspecies), making it more challenging to analyze. Ginkgo has many bioactive components, which make it a chemically diversified plant. It has various medicinal properties, including anticancer and antimicrobial. Ginkgo has a fan-shaped leaf with almost parallel veins divided into two equal parts (Tabassum et al., 2022).

Using the biomimetic design approach can enhance the ability to design sustainable interiors; this could lead designers to understand ginkgo’s chemicals for designing better insulation materials in the interiors considering its anticancer antimicrobial properties. Finding out the strategy behind this tolerance would be a significant discovery for designing a system that could minimize or even resolve internal air pollution due to the toxic materials used on furniture or elsewhere.

The trunk system of ginkgo is compelling and durable against harsh conditions. It has chi-chi, found on mature ginkgo and is a cylindrical structure

that grows downwards from the branches and trunks (Barlow & Kurczynska, 2007, p. 269).

This can give an idea of designing internal structural systems, which could be considered a movable system apart from the main structure of the building. The benefit would be internal earthquake protection, a structurally durable shelf design that could be used as an additional structural element.

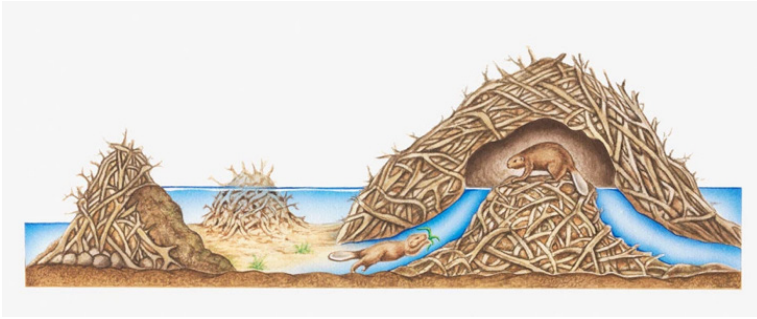
Sequoia (*Sequoiadendron giganteum*), on the other hand, due to being the tallest tree ever (mature can reach up to 100 m), has a unique ability to transfer water from the root to the treetop without any interruption. Water is vital for trees to provide turgor pressure. It keeps trees strong and still and helps them maintain their nutrition through photosynthesis. The main element of water circulation is the root system. Water is carried from the roots through the branches to the tree's crown via osmosis with the xylem vessels, which pull up the water molecules against gravity (Williams et al., 2017, p. 1312).

Trees, exceptionally tall ones, can transpire. This activity causes water to evaporate through the stoma during hot periods of the year and leaves breath regularly, which causes water to be absorbed by the upper parts of the trunk (Wohlleben, 2019, p. 81). It is a unique cycle of efficient water flow.

If this flow of water molecules could be studied deeper and mimicked for a water collecting façade system design, it would have a chance to collect rainwater, reduce water waste or help regions to store water. Also, an efficient water distribution system could be achieved in offices or houses.

### ***2.1.2. Beavers and termites***

When discussing animal architecture, beavers are essential animal engineers in the animal kingdom. They are the major groups of burrowers. Their dams change the environment considerably (Gruber, 2011, p. 185). These dams control erosion, maintain biodiversity, and regulate hydrological flows (URL-2). Their lodges are made of long sticks of almost the same thickness and size. These twigs are woven over and between each other. A hollowed structure creates an inner den completely sealed with mud, fine plant fibres and stone. A particular part is left open for air ventilation. The interior of this structure is well-ventilated and creates a durable structural wall against water pressure (Pohl & Nachtigall, 2015, p. 314). The main door of the lodge is underwatered, which protects them against predators (Hansell, 2007, p. 70). A specific water circulation makes life easier and more protective for beavers (figure 5).



**Figure 5.** A beaver dam (L) and lodge (R)

**Resource:** (Ling, n.d.)

The design strategy of these lodges and dams and the engineering ability of beavers could be studied for designing underwater structures and sustainable residences for places where flooding may be a threatening subject.

Termites are a more significant kind of ant family and are much smaller than beavers but can build five meters tall mounds with specific ventilation, circulation, and regulation systems (figure 6). They consider the sun's direction for conditioning the interior for a constant temperature. They can modify the main mineral of the microstructure and soil's physical properties (Millogo, Y. et al. 2011).



**Figure 6.** A termite mound covered with plants.

**Resource:** asknature.org

Termites build their mounds by mixing mud, dung, and saliva. This mixing is one of the most durable building materials in the animal kingdom. The ingredients of this material could be analyzed profoundly to enhance a sustainable, resilient, and durable building material such as plaster, bonding or 3d house printing material rather than using concrete. Also, an air conditioning system can be achieved for interiors without using any artificial system.



### 2.1.3. Birds: snowy owl (*bubo scandiacus*) and weaver bird (*ploceidae*)

Snowy owls are very special in terms of their feathers which make them fly in absolute silence. Their survival relies on the ability to control noise. These birds have a unique wing system consisting of a comb-like structure (fringes), breaking up the wind and reducing the sound of flapping while flying (figure 7) (Cassidy, 2015).

The technological potential of the feather is crucial; there are turbulence-reducing soft fringes in owl feathers that reduce the turbulence on the wings. This design strategy reduces the sound waves over the wings while air flows over the wings (Winkler, 2015). The feather structure system on the wings of the snowy owl, which is very successful in sound insulation, could be transferred into curtain design; using nanotechnology, it can enable the system to be light, demountable and display a high rate of sound insulation. For example, this curtain system could be used in open-plan offices where gatherings and meetings are often held.



**Figure 7.** Snowy owl and its feather in nanoscale.

**Resource:** (Cassidy, 2015).

In the animal kingdom, many organisms are experts in building structures; these could be beavers, termites, coral reefs or even birds. Weaver birds (*ploceidae*) are good examples of these engineers (figure 8). They are the only species in the bird family that are sociable. The design strategy of weaver birds is complicated. The amazing fact about these birds is that they are the only birds that can tie knots, and they build some of the enormous nests in the bird kingdom. Weaver birds are known for building roofed nests with an elaborate interweaving of grass or leaf strips (Ramel, 2015). Building such an intricate nest is to protect nestlings and eggs from predators and harsh climatic conditions (Simply science).





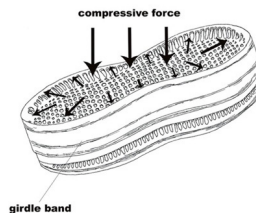
**Figure 8.** A weaver bird nest.

**Resource:** (Tales, 2020).

Considering the tying knots ability of these birds, the design strategy could be used for creating self-standing and one-piece furniture or monolithic cottages made of natural materials. This can create opportunities for designers to establish sustainable new settlements; even indoor air quality can be minimized due to this monolithic system. These settlements can be inaccessible, hidden or camouflaged in terms of security. Also, this monolithic space design strategy can make cottages durable and resilient against earthquakes and floods.

#### ***2.1.4. Diatoms and dinoflagellates***

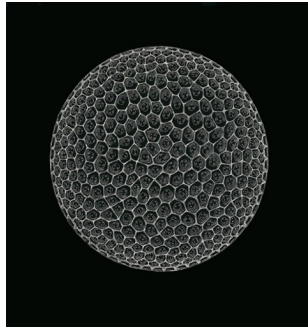
Oceans are full of species that have yet to be discovered; this means approximately %85 of the oceans are unknown. This is an intriguing amount. However, some are amazing, considering their design strategies and technological potentials, such as diatoms and dinoflagellates. Diatoms, for example, are single-celled algae belonging to the phytoplankton family, with a robust structural surface thanks to their sculptured silica walls. Their unique colour comes from photosynthesizing when their pigments absorb energy from sunlight (figure 9) (Hennessy & Wiggins, 2010, p. 101).



**Figure 9.** Diatom's shell frustule.

**Resource:** (Brodie, n.d)

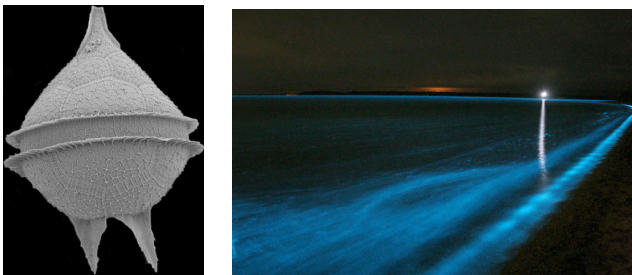
Diatoms are made of perforated silica structure, which enables them to use less silica, ending up with a structurally light frustule (diatom's solid shell) and considerable compressive strength (Brodie, n.d). Due to the formation of the structure seen in Figure 10, a strong and durable shell can inspire designers for spherical, resilient, and durable interior structural elements, which can be economical in terms of material usage and time efficiency or internal structures for durable and light furniture. This natural system's design strategies are lightness and material efficiency, which causes it to be researched for more inspiration.



**Figure 10.** formation of a diatom shell.

**Resource:** (Brodie, n.d)

Dinoflagellates are another plankton family member using nature's one of best lighting systems called bioluminescence. It helps to protect them from predation. It is mainly found in oceans because of the darkness of the deep sea. When they produce bioluminescence, they can glow electric blue, visible at night (figure 11). On the National Ocean Service website, bioluminescence is described as "The light emitted by a bioluminescent organism is produced by energy released from chemical reactions occurring inside (or ejected by) the organism" (Oceanservice.noaa.org).



**Figure 11.** Dinoflagellates on the left and the bioluminescence

**Resource:** (Karabetça, 2016, p.151)

This glowing design strategy can inspire lighting fixtures for spaces where receiving daylight is a problem. Also, naturally glowing paint types (wall, ceiling, or façade paint) which can glow during the lack of light can be studied. These kinds of designs would improve the sustainability of interior design. Interiors are the most important living spaces where people relax, work efficiently or entertain themselves. For this reason, natural systems with specific technological potentials can inspire designers to be ecological and sustainable ideas and strategies.

### 3. CONCLUSION

Nature's design principles are unique. Their solutions are based on multiple trials and errors. After 3.8 billion years of evolution, nature has determined what is good and wrong. Nature knows better than us but sometimes in the shortest and sometimes in the longest ways. If nature is profoundly studied, especially for interior design solutions, it is evident that the results will be effective.

Biomimicry is not just a simple copying method of nature. It involves extracting laws and design strategies from nature under conditions specific to the system and applying these strategies and laws to create new sustainable systems (Bogatyreva & Shillerov, 2015, p. 13). In this sense, the interior design solutions mentioned above depend on extracting design principles and laws from nature and analysing them in collaboration with biologists.

Rethinking the design process of interiors, materials, manufacturing and production with a biomimetic design approach is considered the most effective way to design sustainable interiors.

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## CHAPTER XIII

# BIOPHILIC DESIGN CRITERIA IN INDOOR OF CHILDREN'S PLAYGROUNDS : A SYSTEMATIC REVIEW

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### 1. INTRODUCTION

**W**ith the changing world order and urbanization, the relationship of the individual with nature has been negatively affected. This negative relationship has affected the physical and emotional state of the individual in many different ways. (Beatley 2011; Browning et al. 2014; Petrović, 2017). While it is easier for the adult to struggle with these problems, especially the relationship of the child with nature is one of the important issues for the continuity of generations (Louv, 2008; Moss, 2012). It is very important for individuals to have a strong relationship with nature while they are still in childhood, to value nature, for the development and quality of life of the child. Therefore, the individual's connection with nature is seen as a critical factor in terms of both environmental and social sustainability. Many studies conducted in the 21st century encourage children and adults to reconnect with nature for both a happy life and environmental sustainability (Barrable and Booth, 2020). The common point of the studies, in which the physical, cognitive and emotional effects of nature on individuals are handled from different perspectives, is that



it draws attention to the importance of establishing a connection between the individual and nature.

The connection between the individual and nature may vary according to age groups and geography (Braus & Milligan-Toffler, 2018). A growing number of scientific studies show that children who have regular experiences with and connect with nature develop critical and creative thinking skills that will help them succeed in life (Kellert, 2012; Adams & Savahl, 2017). In addition, children's spending time in a natural environment to play and learn contributes to the development of their social and emotional skills (Hartig et al., 2014). Childhood is the period in which his physical and mental development is not yet completed and he tries to form his own personality by constantly being influenced by the stimuli around him. At the age of four, the child can perceive the basic concepts and attitudes that exist in the world. By interacting with these things while playing with nature, children can activate their unlimited imagination and creative associations (Boldemann, 2006; Park & Cho, 2008). In this context, importance should be given to the child's relationship with nature at an early age (Yu & Ahn, 2009; Kim, 2010; MacNaughton et al., 2017).

Today, many children's opportunities to experience nature have been greatly diminished by reduced outdoor activities and exercise, increased use of computers and media indoors, and driving to and from school (Charles & Louv, 2009). Being away from nature can cause problems such as attention deficit and hyperactivity disorder. In order to alleviate the problems experienced by the child, it is often necessary to create opportunities to interact with nature outdoors (Park & Cho, 2008). Since the child's constant interaction with nature in the flow of life supports his mental and social development, it contributes to the child's growing up as a peaceful, collaborative, creative and versatile individual (Tonge et al., 2016). Although studies have shown that the child's direct experiences of nature contribute to lifelong care for nature, children's lives have largely moved indoors and have lost the opportunity to freely explore the nearby natural world (Chawla, 2020).

A lot of different information is obtained with the help of postgraduate theses and this information is used by other researchers in the same or different disciplines to produce original information. Determining the concepts that provide research motivation for many different fields of study and determining the current situation in the literature helps to clarify the gaps in the field (Karadal et al., 2017). One of the ways chosen to make these gaps in the literature clear is to periodically analyze scientific studies. When the qualitative and quantitative

findings were evaluated in the study of Bahceci and Usengul (2018), it was revealed that the selection criteria of the thesis topic in graduate studies were primarily determined by literature review and that it must be a current topic. It is seen that the subjects examined as the subject of the postgraduate thesis contribute to the developments and changes in the society in which they live. For this reason, it is thought that it will be important to determine the current situation in the literature by revealing the dimensions of “biophilic design” and “children’s playgrounds” in the field of study in design faculties and revealing their relations with each other.

New studies have started to be carried out, including the “construction of a natural life” that will support the ecological natural environment problems experienced on a global basis and lead people back to nature. Biophilic design, which has become a new research topic with its power to bring together different disciplines, has aroused interest all over the world (Akyıldız, 2023). In this context, the fact that individuals spend time indoors, away from nature due to environmental factors, is a matter of close interest to architects who directly design life. The concept of biophilia, which is called nature-based design approach today, constitutes the main fiction of the study. In this context, it has been seen that it is important to determine the existing literature studies titled ‘biophilic design’ and ‘children’s playgrounds’ in Turkey, to examine which variables are emphasized in the studies, how the changes are made on the basis of years, and to reveal how the concepts are evaluated in postgraduate studies.

In this study, it is aimed to analyze the content and vocabulary of the postgraduate thesis studies titled ‘biophilic design’ published in Turkey and to determine the tendencies of the studies towards the concept of child. Similarly, it was aimed to analyze the content and vocabulary of the postgraduate thesis studies titled ‘children’s playgrounds’ published in Turkey, and to determine the tendencies of the studies towards the concept of nature and biophilia. With the current situation determination, it is aimed to draw attention to the importance of considering the biophilic design criteria in the design of children’s playgrounds in design faculties. When the relevant literature is examined, it is seen that many different issues related to ‘biophilic design’ (Demirbaş and Demirbaş, 2019, Doğan, 2021; Demirkol, 2021; Akyıldız, 2023) are discussed. Similarly, it has been determined that there are many different scientific studies on ‘children’s playgrounds’ (Ünal, 2009; Turgut and Yılmaz, 2010; Rükân and Önder, 2011; Duman and Koçak, 2013; Serir, 2022). However, no study has

been found in the literature examining the similar and different aspects of these two independent study areas. With this study, it is thought that revealing the current situation of the related literature will be an original and helpful source for scientific studies.

### *1.1. Biophilic Design Pattern in Children Indoor PlayGround*

Biophilic design is a design concept and standard that aims to actively use various elements and changes in nature in architectural and environmental design. Moreover, the aim of biophilic design is to integrate and use the characteristics of various natural elements in the architectural environment to introduce people to nature and inspire them to coexist with it. Therefore, biophilic design is a sustainable design strategy that integrates and connects people and nature. This reduces the emotional shock caused by artificial architectural environments that complement the sustainable architecture of the past but do not imply a blind connection with nature. However, biophilic design, which focuses on the many positive effects of nature on people, is based on the “biophilia” hypothesis, where natural elements can have more positive effects on people as they integrate with the urban environment. These elements include green walls, green roofs, indoor gardens, nature-friendly pedestrian environments, water bodies, etc. (Kellert, 2016; Park and Lee, 2019). Biophilic design elements can be categorized under 3 titles as nature of space, nature in space and nature in space, represented by 14 detailed elements (Green, 2014). Auxiliary elements in the applicability of the concept of biophilia in space design are brought together in Table 1.

**Table 1:** Biophilic Design Parameters and Auxiliary Elements in Space (Green, 2014; Nogueira,2017)

NATURE IN THE SPACE	
Visual Connect with Nature	<ul style="list-style-type: none"> <li>• Experiencing the mechanical flow of a body of water</li> <li>• Koi pond or aquarium</li> <li>• Green wall surfaces</li> <li>• Artworks depicting nature scenes</li> <li>• Videos showing nature scenes</li> </ul>
Non-Visual Connection with Nature	<ul style="list-style-type: none"> <li>• Digital simulations of nature sounds</li> <li>• Fabrics similar to natural material textures</li> <li>• Sound and/or accessible water</li> <li>• Workable garden (gardening experience)</li> <li>• Edible plants</li> <li>• Pets</li> </ul>
Non-Rhythmic Sensory Stimuli	<ul style="list-style-type: none"> <li>• Materials that move or shine</li> <li>• Reflections of water on a surface</li> <li>• Shadows</li> <li>• Moving colored lights</li> <li>• Hearing nature sounds at indefinite intervals</li> <li>• Mechanically released plant oils</li> </ul>
Thermal & Airflow Variability	<ul style="list-style-type: none"> <li>• Use of controllable HVAC systems</li> <li>• Cross ventilation</li> </ul>
Presence of Water	<ul style="list-style-type: none"> <li>• Liquid water pools (waterfall, fountain, etc.)</li> <li>• Aquarium</li> <li>• Real or simulated water images on different surfaces</li> </ul>
Dynamic & Diffuse Light	<ul style="list-style-type: none"> <li>• Multiple low-glare electric light sources</li> <li>• Diffused lighting on wall and ceiling surfaces</li> <li>• Showcase applications that protect daylight</li> <li>• Adjustable regional and individual lighting</li> <li>• Circadian color reference</li> </ul>
Connection with Natural Systems	<ul style="list-style-type: none"> <li>• Artificial daylight lighting systems integrated into daily cycles</li> <li>• Wildlife habitats (birdhouse, beehive)</li> <li>• Seasonal rainwater storage</li> <li>• Natural patina of materials (wood, stone, leather)</li> </ul>

<b>NATURAL ANALOGUES</b>	
Biomorphic Forms & Patterns	<ul style="list-style-type: none"> <li>• Arrangement of the structural system (tree-shaped columns)</li> <li>• Selection of furniture forms in the building, circulation areas and/or interior</li> <li>• Fabric, carpet, wallpaper designs based on Fibonacci series or Golden Mean</li> <li>• Installations and freestanding sculptures</li> </ul>
Material Connection with Nature	<ul style="list-style-type: none"> <li>• Accent details (natural wood grains; leather; stone, fossil textures; bamboo, rattan, grasses, cork)</li> <li>• Wall construction (wood, stone)</li> <li>• Structural systems (heavy wooden beams)</li> <li>• Natural material covered interior surfaces</li> <li>• Natural color palette (green tones are dominant)</li> </ul>
Complexity & Order	<ul style="list-style-type: none"> <li>• Exposed structure/visible scaffolding</li> <li>• Visible mechanical systems in the space</li> <li>• Facade, corner and window hierarchy</li> <li>• Distinguishing floor plan, landscape plan, urban grid</li> <li>• Visibility of pedestrian and traffic flow</li> </ul>
<b>NATURE OF THE SPACE</b>	
Prospect	<ul style="list-style-type: none"> <li>• Use of transparent material</li> <li>• Balconies, podiums, stairwells</li> <li>• Open floor plans</li> <li>• Landscapes with tree shadows, bodies of water or evidence of human life</li> </ul>
Refuge	<ul style="list-style-type: none"> <li>• Space with heat, sound and image privacy</li> <li>• Meditation and relaxation space (tree houses, high back chair, overhead cage)</li> <li>• Adjustable or translucent shades, louvers, screens or partitions</li> <li>• Use of suspended ceilings</li> <li>• Low level and variable light brightness</li> </ul>

<p>Mystery</p>	<ul style="list-style-type: none"> <li>• Light - shadow games</li> <li>• Use of artwork or installation in the space</li> <li>• Use of translucent material</li> <li>• Auditory stimulation from an invisible source</li> <li>• Partially visible observation windows</li> <li>• Curved edges</li> </ul>
<p>Risk/Peril</p>	<ul style="list-style-type: none"> <li>• Double-height atrium with balcony (endless wall surfaces)</li> <li>• Transparent façade from floor to ceiling</li> <li>• Gravity-defying objects</li> <li>• Transparent railing or flooring</li> <li>• Experience of going under, over or through water</li> <li>• Possibility of close contact with dangerous animals or life-size photographs</li> </ul>

Children’s playgrounds are open spaces where children can relax, meet their play needs, discharge their excess energy, increase their social relations, provide their physiological development, improve their examination and reasoning skills, have various play elements and are designed for the purpose of play. However, due to rapid construction and urbanization, children’s group games, running, cycling and so on. The lack of large areas and plots that will allow activities that require large areas increases the need for children’s playgrounds day by day. Children’s playgrounds and all urban green areas that allow playing play an important role by contributing to the physical and mental development of children. Children’s playgrounds allow children to be discharged and emotionally satisfied, as they provide sunlight and the opportunity to play in the open air and engage in various activities. The common opinion of child psychologists and doctors is that playing indoors without outdoor spaces affects the mental, physical and social development of children negatively. For this reason, it is considered important to design children’s indoor playgrounds by considering the concept of nature. Playgrounds differ in terms of the age groups they address, their formal structures, their visuality and competence. Children’s playgrounds can be examined in terms of features such as location, attractiveness, use of space, integration with nature and safety (Duman and Kocak, 2013).

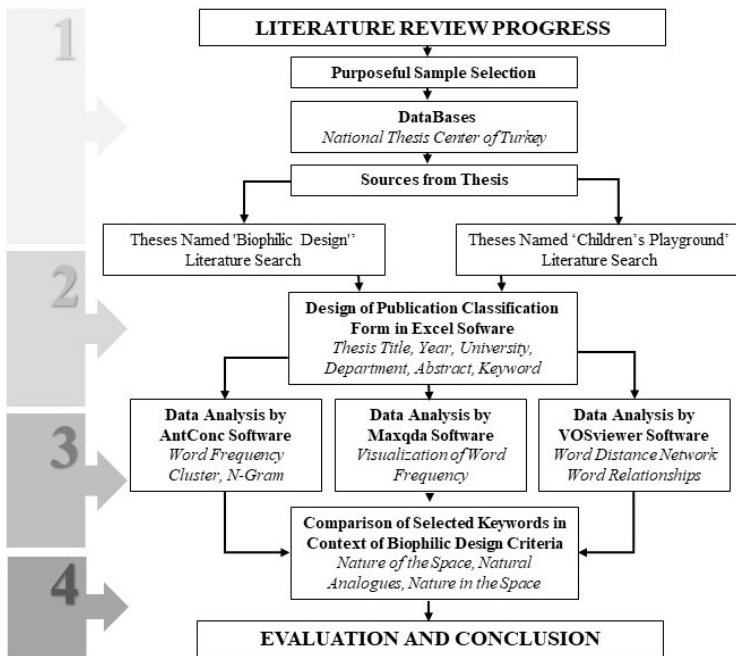
Fewer behavioral problems and injuries are observed in biophilic playgrounds, as more children with different skills and skill levels can play a wide variety of games at the same time. Biophilic playgrounds provide children with opportunities to develop empathy and explore nature, helping them to

gain awareness of nature conservation. It also has positive effects on children's obesity, mental and physical problems, and assessment skills (Cengiz & Boz, 2019). Since biophilic playgrounds are considered to be green spaces that are intertwined with nature only in open areas, the subject of biophilic playgrounds in interior design is very few in design faculties. However, as long as open spaces continue to be labeled as "playgrounds" and are not seen as an integral part of the educational environment for both playing and learning, the proliferation of nature play will remain an elusive goal (Moore and Marcus, 2008). The study is based on the assumption that the concept of biophilia and children's playgrounds can be related to each other in the architecture and design faculties of universities in Turkey.

## 2. RESEARCH METHOD AND SCOPE

This study, which is based on the assumption that the concept of biophilia and children's playgrounds can be related to each other in architecture and design faculties of universities in Turkey, can be called qualitative research. Thesis studies titled 'biophilic design' and 'children playground' registered on the website of the National Thesis Center in Turkey were brought together and conceptual mapping method, document review and content analysis methods were used based on the document review method. Document analysis is a method used to analyze written sources related to the researched subjects (Buyukozturk et al., 2022). In document analysis, first of all, original studies are reached in the relevant literature, the studies are examined, the obtained data are analyzed by bringing them together, and inferences are made according to the results of the analysis (Yıldırım & Şimsek, 2008). In this study, a systematic literature review is aimed at revealing the characteristics of scientific research conducted as a graduate thesis in architecture and design faculties of universities in Turkey, titled biophilic design and children's playgrounds. In accordance with the purpose, the study was designed in 4 stages (Graphic 1).





**Graphic 1:** Research Pattern

**2.1. Data Collection Strategies**

In the first stage of the study, a comprehensive literature review was conducted to create the theoretical framework, and it was determined that the studies based on the concept of biophilia in our country were lacking in aspects including children and children’s playgrounds. In order to reach the most information in the study, the sample was determined by the purposive sampling method (Büyüköztürk, 2022). The sample selection of this study, in which the similar and different aspects of two different research subjects are investigated, is the key point of the study. In this context, the sampling method can also be called maximum diversity sampling. The sample can be determined to consist of homogeneous, variable and different situations in itself, and it is not aimed to provide diversity in order to generalize in this direction, on the contrary, it is aimed to try to find out whether there are any common or shared phenomena among the diverse situations and to examine different dimensions of the problem according to this diversity (Marczyk et al., 2005; Grix, 2010).

In the second phase of the study, postgraduate thesis studies titled 'biophilic design' and 'children's playgrounds' made in the architecture and design faculties of universities in Turkey were accessed and brought together through the YÖKTEZ system. In order to analyze the studies in the next step, the publication classification form was used as a data collection tool. An Excel file was created for the publication classification form, first of all, identity information (author names, year, type) for all postgraduate theses, then abstract and keyword information were recorded in this file. The title, summary and keyword information of the study from the prepared Excel file were combined in another Word file and converted into a format with .txt extension, which is suitable for the software in which the conceptual analyzes of the studies are made.

## *2.2. Data Analysis Strategies*

In the third stage of the study, the data obtained in the study were evaluated using content analysis after the publication was processed into the classification form, which is the data collection tool. Content analysis is interpreted in a way that the reader can understand by making a detailed examination of the data that the researcher wants to process from the sources obtained, by bringing together the data included in the same group, and the trends of the studies in the literature can be determined by content analysis (Yıldırım & Şimşek, 2008; Çalık & Sözbilir, 2014). . In the study, which used software that offers 3 different content analysis, the 'biophilic design' and 'children's playgrounds' studies to be analyzed first were uploaded to AntConc software as separate files. In this software, the most repeated words in the studies were listed, and it was determined that the frequently used words were found in the same word groups with the N-Gram feature. With the KWIC option of the software, the position and meaning of the word groups in the text to be analyzed in detail were examined. While the word 'children' was examined in the works titled 'Biophilic Design', the words 'green' and 'nature', which are among the most frequently used words related to nature, were examined in the studies titled 'Children's Playgrounds'.

While AntConc software presents the analyzes only in text format, depending on the purpose of the study, word analyzes were transferred to Maxqda software to be visualized, and the data obtained were visualized with the 'word cloud' feature of the software. The visualized keywords are presented by separating them from each other in terms of size and color, in accordance with the degree of frequency. While performing content analysis, VOSviewer

software was used thirdly, since it was aimed to reveal the relationship between the words examined in the studies and other words and word groups, as well as visualization and word frequency. Conceptual distance networks have been prepared within the two separate files loaded into the software. The relationship of words with each other is categorized and colored by the software. In this conceptual network, the closer the words are to the center, the more often they are used, and there are arrows showing countless links between the words. The use of three different software within the scope of the study is the chosen method to increase the reliability of the content analysis.

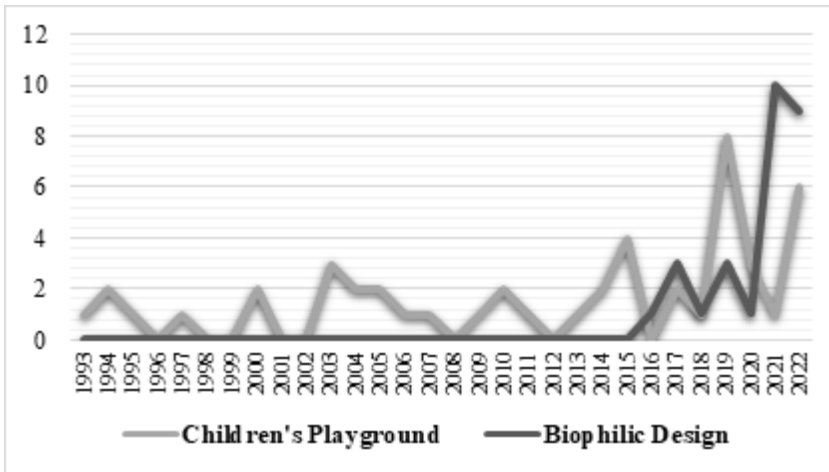
In the last stage of the study, comparisons of the obtained data analyzes were made and similar and different aspects were brought together.

### 3. RESULTS

In this part of the study, studies titled 'biophilic design' and 'children's playgrounds' were brought together as a postgraduate thesis in the architecture and design faculties of universities. The sample of the study consists of the theses made in Turkey, registered in the YOKTEZ system, and written in Turkish and/or English until 2023, with the keywords 'biophilic', 'biophilic design', 'children playground'. Various analyzes on the collected data, the university where the thesis was made and the faculty to which it was affiliated, and statistical graphs were prepared according to the year of writing. These analyzes were interpreted according to the results of qualitative and quantitative analysis, and it was questioned whether there was a significant relationship between the two different study subjects.

The first thesis titled 'biophilic design' in Turkey was published in 2016. It has been determined that there are 29 postgraduate studies conducted between 2016-2023, 26 of which are master's and 3 are doctoral dissertations. On the other hand, it was determined that the first postgraduate thesis titled 'children's playgrounds' was published in 1993 and 48 studies were carried out until 2023. While 47 of the 48 scientific studies titled children's playgrounds were master's thesis, only 1 of them was proficiency in art, and was completed in 2022 at Hacettepe University. When the 77 scientific studies examined within the scope of the study are examined according to the years of completion, it can be said that there is a significant relationship with the number of thesis titled 'children's playgrounds' completed after 2016, together with the first thesis titled 'biophilic design' published in 2016 (Graphic 2).

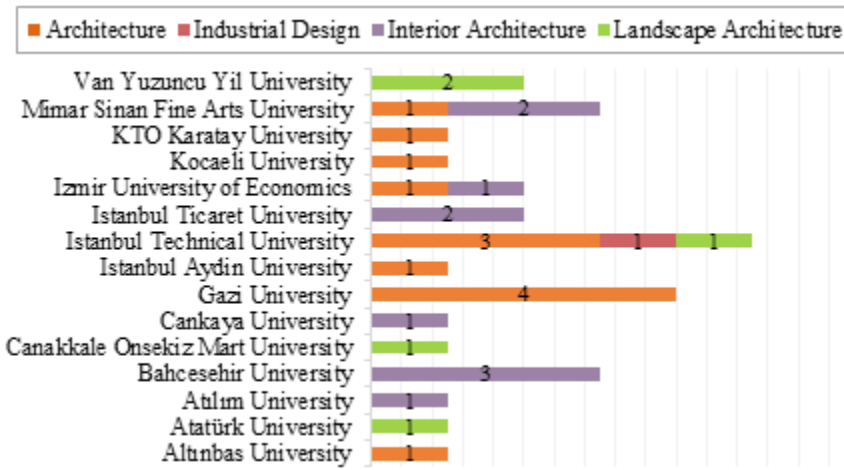
It is seen that there is a sharp increase in the number of these titled biophilic design after 2020. It can be said that the issue has become important with the fact that many developed countries started the 'Biophilic City Movement' during the Covid-19 pandemic, which showed its effect at the end of 2019. In this context, landscape architects, urban planners, interior architects and architects have important duties, and studies that deal with the issue from different perspectives are needed (Çiftçioğlu, 2022). In this context, for the purpose of the study, it was examined to what extent scientific studies titled 'biophilic design' and 'children's playgrounds' could be related to each other.



**Graphic 2:** The variability of these titled 'biophilic design' and 'children's playgrounds' by years

The data of which universities and which faculties the postgraduate theses titled 'biophilic design' dealt with within the scope of the study were brought together in Graphic 3. In this context, the subject has been studied as a postgraduate thesis in the faculties of architecture, interior architecture, industrial design and landscape architecture. In postgraduate studies, the highest number of theses related to the subject were determined as 5 in Istanbul Technical University. Of the 5 theses published, 3 were prepared in the architecture department, 1 in the industrial design department and 1 in the landscape architecture department. In addition, it is seen that Gazi University with 4 theses, Bahcesehir and Mimar Sinan Fine Art University with 3 theses are the universities where the subject is studied frequently. In Turkey, 208 universities, including state and foundation universities, provide education (URL-2), however, this subject is considered as postgraduate study in only 15 universities. In this context, it has been determined

that the rate of universities where postgraduate studies titled ‘biophilic design’ is carried out is 7.21% in total universities. When the distribution of these is considered in the context of the departments in which they were prepared, 13 of them are in the architecture department, 10 in the interior architecture department, 5 in the landscape architecture department and 1 in the industrial design department. According to these data, with 44.82%, the department of architecture was determined as the department where the theses titled ‘biophilic design’ were prepared mostly, and the department of industrial design with the rate of 3.44% was determined as the department where the theses titled ‘biophilic design’ were prepared at least.

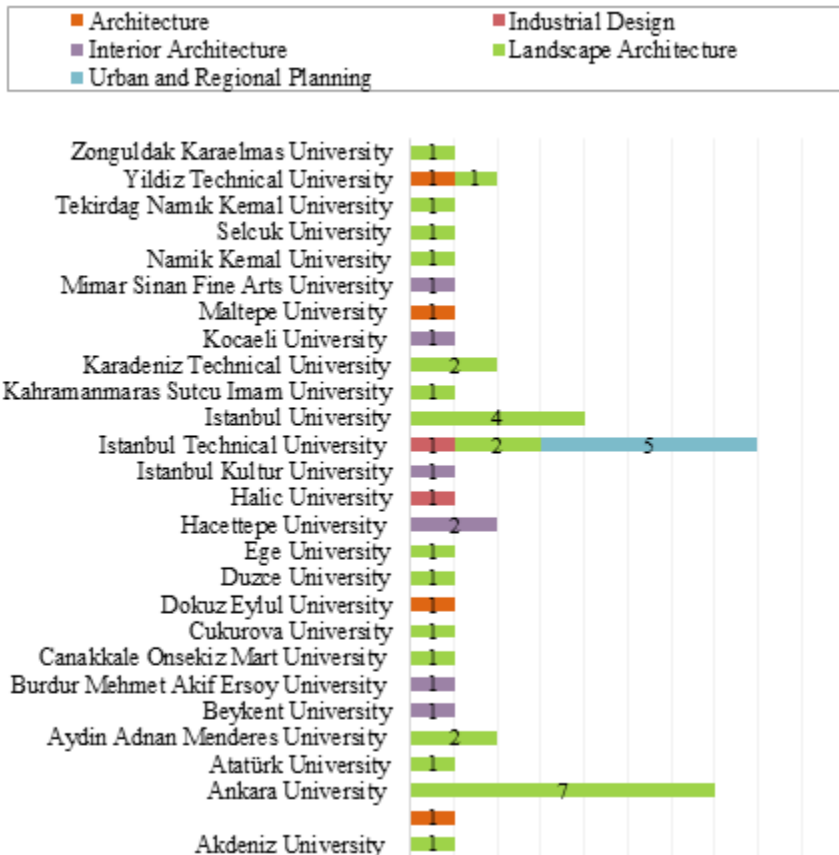


**Graphic 3:** Classification of theses titled ‘biophilic design’ according to universities and faculties

Another subject analyzed within the scope of the study is in which universities and in which departments the postgraduate theses titled ‘children’s playgrounds’ were prepared. The data obtained from the National Thesis Center website were brought together in Graphic 4. In this context, it was determined that the subject was studied as a graduate thesis in the departments of architecture, interior architecture, industrial design, landscape architecture and urban and planning. In graduate studies, the highest number of theses related to the subject was determined as 8 in Istanbul Technical University, as in the title of ‘biophilic design’. Of the 8 theses published, 5 were prepared in the city and regional planning department, 1 in the industrial design department and 1 in the landscape architecture department. In addition to Istanbul Technical University,

graduate scientific studies on children's playgrounds were carried out at Ankara University with 7 theses.

Postgraduate studies titled 'children's playgrounds' have been published in 27 universities in Turkey, and the number of universities producing theses related to children's playgrounds is approximately 56% higher when compared to the number of universities that have published studies titled 'biophilic design'. When the distribution of theses is considered in the context of the departments where they were prepared, 27 of them are in the landscape architecture department, 4 in the architecture department, 6 in the interior architecture department, 5 in the city and regional planning department, and 1 in the industrial design department.



**Graphic 4:** Classification of theses titled 'children's playgrounds' according to universities and faculties

According to these data, landscape architecture with a rate of 57.44% was determined as the department where the theses titled 'children's playground' were prepared, and the department of industrial design with the rate of 2.12% was determined as the department where the theses titled 'children's playground' were prepared at least. Although outdoor children's playgrounds are frequently examined in the design of children's playgrounds, it has been determined that the number of studies on indoor children's playgrounds is low.

### ***3.1. Conceptual Analysis of Biophilic Design Graduate Thesis Studies in the Context of Children's Playgrounds***

In Table 2, the title, abstract and keywords of the postgraduate thesis studies conducted in design faculties in Turkey were scanned with the keyword 'Biophilic Design' and the top 30 most frequently used concepts were brought together with the help of AntConc software. According to the analyzed postgraduate theses, it was determined that the concepts of 'design' were used 470 times, 'biophilic' 394 times, 'nature' 250 times and 'spaces' 147 times. In the light of this information, it can be concluded that, in addition to biophilic design, the word 'architecture' repeated 99 times and the word 'interior' repeated 58 times are included in the first 15 most frequently repeated words, in the postgraduate thesis studies on biophilic design. When the word frequencies used in the theses are examined, it can be said that the words 'human', 'people', 'life' and 'living' and 'children' are among the top 20 most frequently used words, and that it is related to the user-oriented design approach in studies examining biophilic design.



Table 2: Word frequency in theses written on ‘Biophilic Design’

<b>Nu</b>	<b>Keywords</b>	<b>Frequency (f)</b>	<b>Nu</b>	<b>Keywords</b>	<b>Frequency (f)</b>
1	Design	470	16	Life	50
2	Biophilic	394	17	Green	48
3	Nature	250	18	Criteria	48
4	Spaces	147	19	Living	39
5	Buildings	111	20	Relationship	39
6	Study	107	21	Children	36
7	Architecture	99	22	Effect	36
8	Human	92	23	Connection	35
9	Environment	89	24	City	34
10	People	70	25	Context	34
11	Elements	65	26	Concept	33
12	Biophilia	63	27	Patterns	29
13	Natural	60	28	Urban	28
14	Interior	58	29	Areas	27
15	Approach	58	30	Different	28

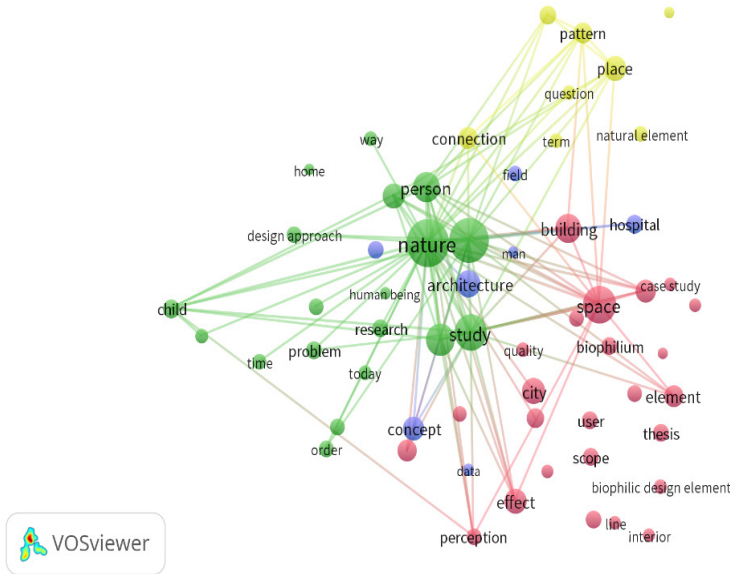
In the postgraduate theses titled ‘Biophilic Design’ prepared in design faculties, the word ‘children’ is repeated 36 times within the 30 most frequently used words. It can be mentioned that the word ‘children’ is among the most frequently used words, and the child user has an important place in theses on biophilic design. Using the N-gram feature of AntConc spelling, the words with which the word ‘children’ are frequently matched were determined, and the meanings of these matches in the text were examined with the KWIC feature. In the postgraduate studies analyzed, it was determined that the word ‘children’ was used with the words ‘spaces’ and ‘hospital’. The reason why the word ‘children’ is used together with the words ‘space’ and ‘hospital’ in the theses titled biophilic design can be shown as the healing effect of the biophilic design on the space user. According to the biophilic hypothesis, the biological bond between nature and the human body positively affects human health (Gillis and Gatersleben, 2015). There is the word cloud obtained by visualizing the word frequency analyzes obtained by writing Maxqda (Figure 1).



**Figure 1:** Vocabulary of Theses Titled ‘Biophilic Design’ Cloud Analysis

The word ‘children’, which is repeated 36 times, was chosen in order to examine the similar and different aspects of the data, whose word frequencies were obtained by AntConc writing, with the studies titled ‘children’s playgrounds’. In this context, the topics in which the word ‘children’ is used, analyzed in studies titled ‘biophilic design’ can be classified as;

- the necessity of considering biophilic architecture as an important design approach in interior design of children’s hospitals,
- the positive effect of designing pre-school learning spaces according to biophilic design criteria on children’s participation in the lesson,
- spaces designed using biophilic design parameters can reduce the negative effects on the psychology of children who are away from nature,
- by using biophilic design in the built environment for children’s spaces, many children can get a taste of what it’s like to be in nature.
- it is beneficial to enable children who spend most of their time in built environments to experience nature through biophilic design,
- enabling children to connect with nature in the best possible way, thus creating a positive chain reaction.



**Graphic 5:** Conceptual association distance map of a diploma thesis with the title ‘Biophilic Design’

Depending on the purpose of the study, the application using the VOSviewer script reveals a concept association covering the abstract and keywords (Graphic 5). This software is able to reflect themes focusing on a specific field, as the frequency of keywords’ co-occurrence is based on the assumption that the keywords of the studies performed in a particular field can represent the content of the relevant field. When the density map (Graphic 5), in which the concepts with the highest frequency of keyword associations are given from the center outwards, is examined, it is necessary to see the data together at least 10 times in order to obtain more meaningful results, since there were 2352 keywords in total in 29 studies titled ‘biophilic design’. limited to. The most common concepts among 59 terms that meet this condition are included in the distance map given below. The close relationships between 59 terms and 1638 ties in the works titled ‘Biophilic Design’ are revealed.

### ***3.2. Conceptual Analysis of Postgraduate Thesis Studies on Children’s Playgrounds in the Context of Biophilic Design***

In Table 3, the title, summary and keywords of the postgraduate thesis studies conducted in design faculties in Turkey were scanned with the keyword ‘Children Playgrounds’ and the top 30 most frequently used concepts were

brought together with the help of AntConc software. According to the analyzed postgraduate theses, it was determined that the concepts of ‘children’ were used 659 times, ‘playgrounds’ 525 times, ‘play’ 276 times and ‘design’ 208 times. In the light of this information, it can be mentioned that the word ‘design’ is the 4th most frequently repeated word next to children’s playgrounds, and that there are studies on the design of spaces in the postgraduate thesis studies. When the word frequencies used in the theses are examined, the words ‘parks’, ‘urban’, ‘city’, ‘district’, ‘street’ and ‘environment’ are among the top 20 most frequently used words. It can be said that it is examined in the context of its relationship with the outdoors. Considering the relationship of children’s playgrounds with the outdoors and the built environment in the studies reveals the lack of consideration of the subject independently from the interior space.

**Table 3:** Word frequency in theses written on ‘children’s playgrounds’

<i>Nu</i>	<i>Keywords</i>	<i>Frequency (f)</i>	<i>Nu</i>	<i>Keywords</i>	<i>Frequency (f)</i>
1	Children	659	16	City	50
2	Playgrounds	525	17	District	45
3	Play	276	18	Needs	43
4	Design	208	19	Public	41
5	Areas	185	20	Elements	39
6	Study	110	21	Materials	37
7	Development	102	22	Streets	37
8	Spaces	88	23	Environment	36
9	Parks	84	24	Standards	36
10	Game	72	25	Green	31
11	Physical	67	26	Principles	31
12	Criteria	59	27	Open	28
13	Urban	58	28	Safetly	28
14	Social	56	29	Mental	24
15	Equipment	55	30	Nature	23

In the graduate theses titled ‘Children Playgrounds’ prepared in design faculties, the word ‘green’ repeated 31 times and the word ‘nature’ repeated 23 times are included in the 30 most frequently used words. It can be said that these words are frequently used in theses on children’s playgrounds, and the child’s relationship with nature is also taken into consideration. In the analyzed studies, the word ‘green’ was used only together with the word ‘area’, and the child’s

relationship with nature was examined through the ‘green area’ duplication. Within the scope of the study, in the graduate studies on children’s playgrounds, the ‘green area’ duplication was most often paired with the words ‘urban’, ‘unit’, ‘level’, ‘district’ and ‘types’. The words ‘green’ and ‘nature’ were chosen in order to examine the similar and different aspects of the data, whose Word frequencies were obtained by AntConc writing, with the studies titled ‘biophilic design’.



**Figure 2:** Vocabulary of Theses Titled ‘Children’s Playgrounds’ Cloud Analysis

By using the N-gram feature of AntConc spelling, the words in which the words ‘green’ and ‘nature’ are frequently matched were determined, and with the KWIC feature, the meanings of these matches in the text were examined. In this context, the topics where the word ‘green’ is used, analyzed in studies titled ‘children playground’ can be classified as;

- *the decrease in green areas for children’s use due to population growth and urbanization,*
- *nowadays, the fact that the child spends less time in the green area negatively affects the physiological and psychological aspects,*
- *urban green spaces that provide play opportunities contribute to the development of children,*
- *the inadequacy of green children’s playgrounds in terms of quantitative and qualitative characteristics,*

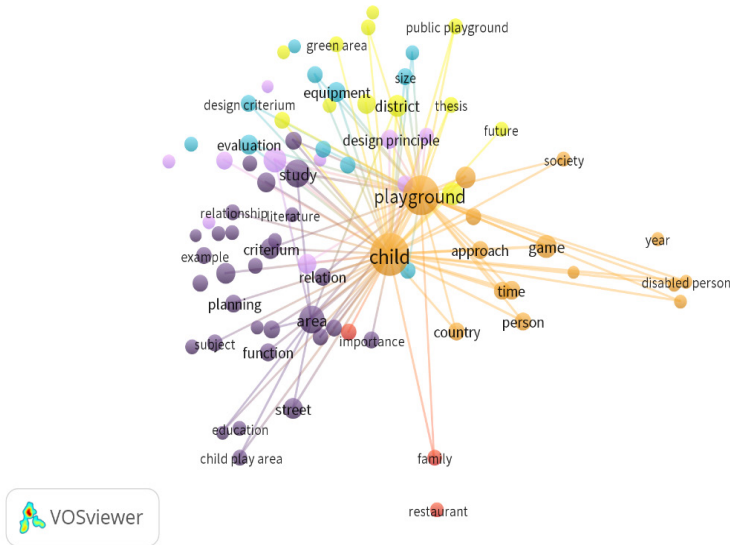
- *the necessity of correct planning of playgrounds for children in urban planning,*
- *The importance of playgrounds, one of the urban green areas, in ensuring the sustainability of children.*

Similarly, the word 'nature' was repeated 23 times and it was determined that it was used together with the words 'park', 'play', 'playgrounds' and 'socialize'. Topics where the word 'Nature' is used;

- *examination of the ideal status of children's playgrounds designed according to nature and natural material usage criteria,*
- *the necessity of designing playgrounds that will provide opportunities for children to play in nature and grow as healthier individuals,*
- *due to the decrease in green spaces today, children's connection with nature, their respect for nature and the experiences they can get from nature are gradually decreasing,*
  - *the necessity that children's playgrounds should be designed in accordance with the pedagogy of children, compatible with nature, aesthetic, safe and in a way that supports children's imagination,*
  - *the necessity for playgrounds designed for children to be oriented towards the purpose and nature of the game.*

In this context, it can be said that the child's relationship with nature is also associated with outdoor playgrounds.

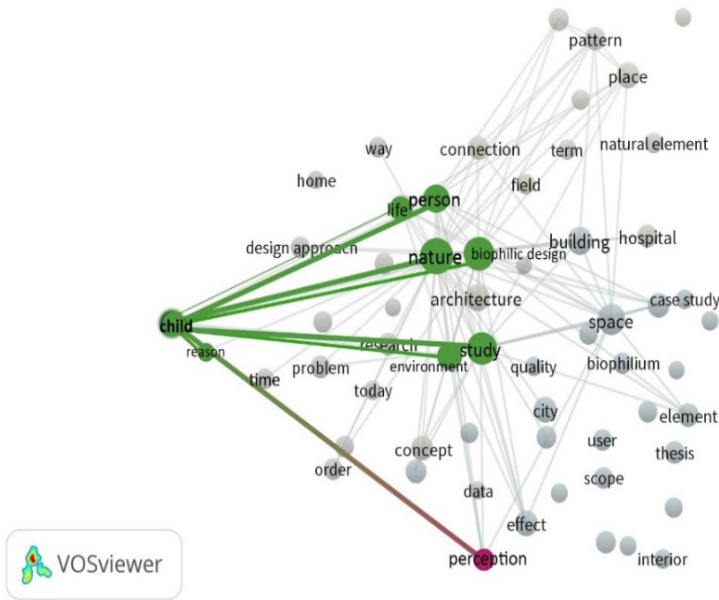
Depending on the purpose of the study, the application using the VOSviewer script reveals a concept association covering the abstract and keywords (Graphic 6). This software is able to reflect themes focusing on a specific field, as the frequency of keywords' co-occurrence is based on the assumption that the keywords of the studies performed in a particular field can represent the content of the relevant field. Since there were 2355 keywords in total in 48 studies titled 'children playground', which were discussed within the scope of the study, the data was limited to the condition of being seen together at least 10 times in order to obtain more meaningful results. The most common concepts among 82 terms that meet this condition are included in the distance map given below. In the studies titled 'children playground', the close relationships between 82 terms and 2705 ties are revealed.



**Graphic 6:** Conceptual association distance map of a diploma thesis with the title ‘Children’s Playgrounds’

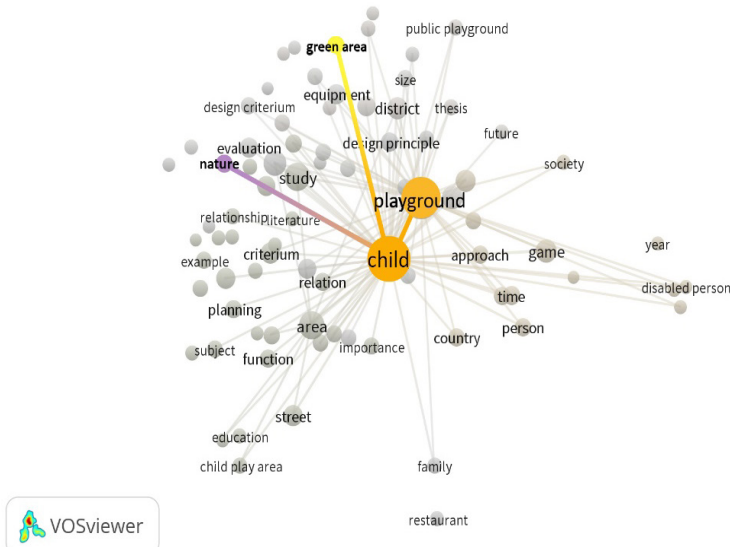
Content analyzes associated with biophilic design criteria were brought together in studies titled ‘biophilic design’ and ‘children’s playgrounds’, which have similar word groups and meanings despite being different study subjects. While the word ‘child’, which is discussed in the studies titled ‘biophilic design’, is closely related to the words ‘life’ and ‘nature’, it is related to each other at a far distance with the words ‘biophilic design’ and ‘person’ (Graphic 7). On the other hand, a remarkable word association was detected in the studies. In these titled biophilic design, the word ‘child’ has been discussed in distant connection with the word ‘perception’. The word ‘Perception’ is associated with the ‘nature of space’ category in the 3 main criteria of the biophilic design criteria that constitute the theoretical framework of the study. It can be interpreted that it will be related to the main criteria ‘prospect’, ‘refuge’, ‘mystery’ and ‘risk/peril’ in this category. Matching the word ‘child’ with these criteria and the fact that places with children are generally accepted as open spaces/outdoors can be shown as a reason. The fact that children play in open areas shows that safety precautions should be taken. After the studies were analyzed, although they were seen as distantly related to each other, it was determined that similar topics were included in the subtext even with only word analysis.





**Graphics 7:** The Associated Distance Map of the Word ‘Child’ in Biophilic Design Theses

Similarly, the distance relationship between the words ‘nature’ and ‘nature’, which were examined in studies titled ‘children’s playgrounds’, is shown on the network map with VOSviewer script (Graphic 8).



**Graphics 8:** Distance Map of the Words ‘Nature’ and ‘Green Area’ Associated with Theses on Children’s Playgrounds

When we look at the position of the words ‘green’ and ‘nature’ on the network map, which are examined in the theses titled ‘Children’s playgrounds’, it can be said that there are fewer associations compared to their work titled ‘biophilic design’. These thesis studies focusing only on the words ‘green area’ and ‘nature’ can be associated with the material selection criteria used in space design in biophilic design principles. Similar to the studies titled ‘biophilic design’, the category that can be associated with indoor children’s playgrounds may be ‘nature in space’, since there are outdoor-oriented approaches.

### ***3.4. Limitations of the Research***

Research The Council of Higher Education was made through the National Thesis Center. For this reason, only 77 postgraduate theses that have access and are registered in the <https://tez.yok.gov.tr/UlusalTezMerkezi/> system were included in the study. Conducting the study through publications accessible from the university library constitutes the limit of the research.

## **4. CONSLUSION**

In the changing world order with urbanization and population growth, people have moved away from nature. Although adult individuals have a preference to stay away from nature voluntarily, individuals at a young age are kept away from nature independently of their own preferences. For children to express themselves and for their social, physical and cognitive health, they need to be in touch with nature and play in nature-related spaces. This issue is an issue that needs to be studied and drawn attention to by many different researchers. The popularity of biophilic design in this regard around the world has helped many designers to design according to this hypothesis. Scientific studies in the literature are effective in raising public awareness and considering the issue. In this context, although there are separate fields of study, two subjects titled ‘biophilic design’ and ‘children’s playground’ were brought together in a single study and the current status of the theses made in Turkey on this subject was examined.

When the related studies are examined, it has been determined that two separate titles, which are handled as postgraduate thesis in architecture and design faculties in Turkey, are related to each other. While the word ‘children’ is not ignored in studies titled ‘biophilic design’, it has been determined that there are concepts related to biophilic design such as ‘nature’, ‘green’ and ‘green area’ in studies titled ‘children’s playgrounds’.

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## CHAPTER XIV

# ECOCENTRIC APPROACH IN INTERIOR FURNITURE DESIGN

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## 1. INTRODUCTION

Humanity has aided from nature since its existence, processed nature and tried to dominate nature. Afterwards the Industrial Revolution, the culture of living in harmony with nature, which has been going on for thousands of years, has been abandoned, and the tendency to use nature and natural resources has increased. In this period, when the anthropocentric ethical approach, which sees nature as an existing tool to serve people, is at the forefront, nature and the environment have been protected to the extent that they are beneficial to us (Ertan, 2004). This exploitative attitude on the environment has led to environmental annihilation, deterioration of ecological balance and human health over time.

When this situation comes to an undeniable concern, studies on environmental awareness on a global scale have begun to broaden. One of the biggest factors that destroy and harm nature, which is indispensable for human life, is again the human being himself. For this reason, the concept of “environmental ethics”, which is an applied field of ethics, has been brought to the agenda in order to prevent this destruction caused by human beings (Ağbuba, 2016). The basis of environmental ethics, which methodically examines the natural environment and human relations, is to build a livable environment and transfer



it to future generations (Des Jardin, 2006; Kayaer, 2013). Ethical approaches to the environment differ from each other according to their angles, central focal points and issues of interest. While the focus of anthropocentric ethics is human, it is possible to group the emerging new environmental ethics approaches as “living-centered” (biocentric) and “environment-centered” (ecocentric) ethical approaches, which are different from this approach (Des Jardin, 2006; Ergün & Çobanoğlu, 2012; Şahin, Kazoğlu, & Gerdan, 2017).

The ecocentric approach is an approach that observes the ecological balance, which emerges as a criticism against human-centered environmental ethics (Thompson & Barton, 1994). According to Dunlap and Van Liere (1978), the ecocentric approach argues that individuals should protect nature and act accordingly without considering their own interests. However, Curi (2009) emphasizes that people should stop believing that they are the master of the universe and instead of a human-centered perspective, they should respect the right of everything that exists in the environment to survive. The ecocentric approach considers man as an inseparable part of nature. For this reason, the ecocentric approach has a holistic rather than individualistic approach (Des Jardin, 2006; Wu, Zhang & Yang 2020). The ecocentric approach, which emphasizes that the right to life of all beings in nature should be protected and that man is only one of many living things on earth, considers nature as a whole.

The inefficacy of the biocentric approach in producing way outs to environmental problems has a significant role in the emergence of the ecocentric approach by bringing new searches (Bülbül, 2013). In addition to the biocentric approach, the ecocentric approach also considers non-living environmental factors. For this reason, it has been tried to show that abiotic elements, which have been ignored in terms of environmentalism in the ecocentric approach, have an ethical value. Whilst humans are in the focus of human-centered ethics, living things are in the focus of the biocentric approach, and the whole of nature is in the focus of the ecocentric approach. As a result, it is possible to say that the ecocentric approach is the most comprehensive approach by focusing on the whole of nature, including all living and non-living beings (Kayaer, 2013; Keleş & Ertan, 2002; Kortenkamp & Moore, 2001).

According to the ecocentric approach, the worth of nature is independent of the value given by humans. This value is immanent, in other words, it is associated with a species being inherent in it due to its existence. It has an essential and inherent value that connects all the elements in nature, spatially and temporally, as well as keeping them together with ecological processes

(Gray, Whyte & Curry, 2018; Shastri, 2013). In the ecocentric approach, it is adopted that nature and the environment have a unique value, and it is aimed to reveal and solve environmental problems (Thompson & Barton, 1994). For this reason, in this approach, centering the nature, respect and admiration for the environment are at the forefront. On the other hand, ecocentric approach aims to protect nature, prevent environmental pollution, protect biodiversity and live in harmony with nature. This situation also has similarities with the ethical principles of ecology (Stern & Dietz, 1994; Fadli, 2022; Sockhill, Dean, Oh, & Fuller, 2022).

The ecocentric approach also supports a sustained life-style, the philosophy of sustainability is based on the realization of economic and population growth without exceeding the carrying capacity of the environment and nature (Meadows, 2013). On the other hand, while the ecocentric approach draws attention to environmental pollution and the use of natural resources, it also focuses on respecting nature in resource use and minimizing waste as much as possible (Ünder, 1996; Yıldız & Sipahioğlu, 2008). Therefore, it is possible to say that the ecocentric approach is related to the sustainability approach. On the other hand, the most important point where these two approaches differ from each other is the consideration of human comfort and interests in sustainability. In the ecocentric approach, the tendency to protect the environment takes precedence over human welfare (Demirarslan, Demirarslan, Salihoğlu, & Alıcı Aka, 2022). For this reason, while the ecocentric approach forms the basis of sustainability, the mission of protecting all living and non-living beings in the environment is addressed in a more comprehensive way in this approach.

With the environmental problems experienced and the search for solutions that emerged afterwards, more importance has been given to environmental production systems. In the second half of the 1980s, an approach based on shaping the industry in line with environmental principles emerged. This approach aims to examine the effects of production systems and the raw material used on the environment, recycling principles and life cycle effects of products. Production methods shaped in line with these goals are explained as environmentally friendly production. The aim of environmentally friendly production is to ensure the efficient use of resources, to encourage the use of local raw materials and to protect biodiversity and the environment by reducing waste generation (Türkiye Bilimsel ve Teknolojik Araştırma Kurumu [TÜBİTAK], 1999).

Environmentally friendly production approaches have gained an important place in the construction and product sector in recent years. In

this context, production investments related to environmental awareness have started to increase in the furniture sector. From this point of view, the aim of this study is to examine the reflection of the Ecocentric design approach, which is based on environmental protection, on furniture design through existing examples. In the study, it is aimed to reveal the ecocentric design principles that come to the fore in contemporary furniture designs. When the relevant field is examined, it is thought that the study will make an important contribution to the literature because of the limited number of resources on Ecocentric furniture design.

## 2. ECOCENTRIC FURNITURE DESIGN

Furniture is a miscellaneous field that falls under the interest of many disciplines. Design, on the other hand, is an action that produces solutions to meet some needs and solve problems. Creating a product as a result of the design process is a contribution made by the designer to the existence of nature (Demirarslan et al., 2022). Furniture design, whose history dates back almost to the existence of humanity, was initially developed to meet the function. Design approaches have changed over time due to the influence of factors such as economic, technological and aesthetic concerns. It is possible to say that many design approaches from past to present have affected furniture design. In the 21st century, various factors such as population growth rate and consumption phenomenon cause the rapid decrease of natural resources, increase in waste, environmental pollution and destruction of nature. As in every sector, the furniture design and production process has some environmental effects. Creating designs by adopting the environmental ethics approach in today's furniture designs is one of the important steps that will change this situation.

While materials coherent with nature were used in furniture making in prehistoric times, changes in the use of materials have been observed in the furniture industry with the beginning of plastic consumption since the 1900s (Demirarslan et al., 2020). The functional and aesthetic properties of new material types that have emerged with the effect of technological and scientific developments have overtaken their environmental effects. The destruction of all these developments on the ecosystem has reached undeniable dimensions over time and necessitated taking precautions. At this stage, the environmental ethics approach has gained importance. Weismann and Sekotowski (1991)

stated that environmentally friendly production goes beyond compliance with environmental laws and supports the philosophy of preventing pollution. Environmentally friendly production activities have the mission of preventing waste generation during its life cycle and minimizing the damage to the environment. From this point of view, the ecocentric approach, one of the ecocentric ethical approaches, aims to make environmentally sensitive and nature-friendly designs in furniture design. Thus, it is possible to prevent the destruction of nature and slow down this process with environmentally friendly productions.

In the furniture sector for environmentally friendly production, two solutions were initially brought to the agenda. The first of these is the use of natural materials, and the other is the use of materials suitable for recycling (Güneş & Demirarslan, 2020). Over the years, it has been understood that environmentally friendly furniture production is not possible only with material selection. In addition to being natural and recyclable, it is also important to obtain the selected material from the immediate environment. In addition to this, reducing the waste generation, and qualifications such as being modular, etc. are expected from the product. In this direction, it is possible to collect ecocentric furniture design principles under the headings of minimizing waste, local sourcing, recycling principles and modularity (Table 1).

**Table 1.** Principles of ecocentric approach in furniture design

<b>Ecocentric Design Approach in Furniture</b>	
<b>Minimizing waste</b>	<ul style="list-style-type: none"> <li>• High strength (Demirarslan et al., 2022; Hemel &amp; Cramer 2002; Özçuhadar &amp; Öncel, 2011)</li> <li>• Easy to supply and repair spare parts (Alhola, 2008; Canbolat, 2019; Demirarslan et al., 2022; Hidayetoğlu &amp; Yıldırım, 2017; Özçuhadar &amp; Öncel, 2011)</li> <li>• Less maintenance repair (Alhola, 2008; Hidayetoğlu &amp; Yıldırım, 2017; Bosch, Verploegen, Grösser, &amp; Van Rhijn, 2017; Fernandes, Junior, &amp; Sant'Anna, 2016)</li> <li>• Long life Alhola, 2008; Canbolat, 2019; Demirarslan et al., 2022; Elibol, Bezci, Dündar, Türkkkan, &amp; Varol, 2018; Hemel &amp; Cramer 2002; Özçuhadar &amp; Öncel, 2011; Fernandes &amp; Junior, 2014; Zeren &amp; Nakıboğlu, 2009)</li> <li>• Being re-functional (Elibol et al., 2018; Demirarslan et al., 2022)</li> <li>• Reducing / eliminating waste from packaging (Maxwell &amp; Van Der Vorst, 2003; Zeren &amp; Nakıboğlu, 2009)</li> </ul>
<b>Local Sourcing</b>	<ul style="list-style-type: none"> <li>• Local raw material use (Canbolat, 2019; Hidayetoğlu &amp; Yıldırım, 2017; Öç, 2013; Şahin, 2018; Yararel &amp; Aytar Sever, 2019)</li> <li>• Sourcing raw materials in an environmentally friendly manner (Canbolat, 2019; Demirarslan et al., 2022; Hidayetoğlu &amp; Yıldırım, 2017; Şahin, 2018; Öç, 2013; Yararel &amp; Aytar Sever, 2019).</li> <li>• Supporting the employment of local people (Bosch et al., 2017; Demirarslan et al., 2022; Muhammad Suandi, Amlus, Hemdi, Abd Rahim, Ghazali, &amp; Rahim, 2022; Vicente, Silva, &amp; Frazao 2009)</li> <li>• Certification method (Demirarslan et al., 2022)</li> </ul>
<b>Recycling Principle</b>	<ul style="list-style-type: none"> <li>• Use of recyclable materials (Demirarslan et al., 2022; Hemel &amp; Cramer 2002; Hidayetoğlu &amp; Yıldırım, 2017; Yılmaz, 2015; Zeren &amp; Nakıboğlu, 2009)</li> <li>• Use of recycled materials (Alhola, 2008; Demirarslan et al., 2022; Hemel &amp; Cramer, 2002; Yeang, 2009; Yılmaz, 2015)</li> </ul>

<b>Modularity</b>	<ul style="list-style-type: none"> <li>• Easy assembly-disassembly (<i>Alhola, 2008; Bosch et al., 2017; Çiftçi &amp; Demirarslan, 2021; Hemel &amp; Cramer, 2002; Özçuhadar &amp; Öncel, 2011; Zeren &amp; Nakıboğlu, 2009</i>)</li> <li>• Fast manufacturability (<i>Bosch et al., 2017; Hidayetoğlu &amp; Yıldırım, 2017</i>)</li> <li>• Flexibility-multifunctionality (<i>Demirarslan et al., 2022</i>)</li> </ul>
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As a result of the unconscious use of resources and a great increase in consumption, the problem of waste material has begun to emerge. It is possible to prevent this by presenting timeless products in terms of both material selection and design. In order to reduce the rate of turning into waste, the products should be durable, easy to maintain and repair, and parts should be available. In addition to this, the fact that the products can be reused with another function after they have completed their useful life and that they are ready for transportation by using as little material as possible at the packaging stage will also significantly reduce waste generation.

In the environmentally sensitive design approach, local features are very important in the formation and shaping of the design (Çiğın & Yamaçlı, 2019). Minimizing the environmental impact during the procurement of the material and its transportation to the production area is possible by obtaining the used material from the immediate environment. The energy consumed during the procurement of raw materials should be minimized. Obtaining, processing and preparing local materials for production is an important development element for the development of the people of the region. However, working with certification bodies that control the process of local resources will make it easier to make choices within the framework of ecocentric ethics. For example, choosing FSC (Forest Stewardship Council) certified products will contribute to environmental protection and maintaining ecological vitality (Demirarslan et al., 2022).

The concept of recycling in furniture production is defined as producing recyclable furniture and producing furniture from recycled materials. Recycling is extremely effective in minimizing the damage caused by environmental pollution. Recycling provides many benefits such as preventing waste, ensuring energy saving and efficiency, reducing the amount of waste, and reducing greenhouse gas emissions (Demirarslan et al., 2022).












The concept of modularity in furniture design can be explained by its ability to change/transform, adapt, and produce/assemble as quickly and easily as possible. According to the ecocentric approach, furniture should be easily produced with a minimum number of parts and materials, have high efficiency by offering flexible use, and require minimum energy during assembly and disassembly (Şatır, 2015). The fact that furniture can be easily disassembled, assembled and reassembled has benefits such as preventing waste generation, reducing maintenance and repair costs, and reducing energy costs.

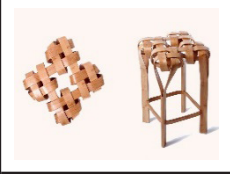




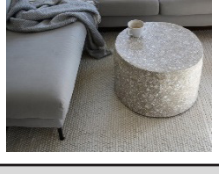


### 3. MATERIAL AND METHODS

This study, which aims to reveal ecocentric reflections in furniture design, was designed with a descriptive design, which is one of the quantitative research designs. Ecocentric furniture design principles, which were created as a result of the literature review on the subject with the aim of providing a framework for ecocentric furniture design, were decisive in the selection of the sample group. On the other hand, in the determination of the sample group, attention was paid to the fact that the furniture had current designs, belonged to a designer, and that there were sufficient written documents and visuals to explain the design. In this context, 20 pieces of furniture obtained from sources such as articles, theses, books, journals, and the internet in national and international databases by using the scanning method were determined as the sample group of the study (Table 2). The sample group was examined in line with the determined ecocentric furniture design principles. Then, prominent ecocentric features were revealed by creating evaluation tables.



**Table 2.** Ecocentric furniture examples

Furniture	Designer	Furniture	Designer
	Philippe Starck Emecco		Bentu Design
Broom Chair		Wreck	
	Vanessa Yuan & Joris Vanbriel		Irene Roca Moracia
Charlie Chair		Grid	
	Studio Pesì		Brodie Neil
Dot Collection		Flotsam Table	
	Vadim Kibardin		The New Raw
Kibardin Design		Ermis Chair	
	Humberto Campana Fernando Campana		Dirk van der Kooij
Sobreiro Collection		RvR Chair	
	Seth Grizzle / Jon Junker		Charlotte Kidger
Slice Chair		Industrial Craft Table	

	Qiaolin Gong		Fict Studio
Knot Chair		Fragment	
	Meike Harde		Made in Situ
London Storage		Burnt Cork	
	Ariyan Davoodian		Carolina Härdh
Un-Lim Collection		Navel	
	José Manuel Carvalho Araújo		Dirk van der Kooij
Tumble		Meltingpot Table	

#### 4. FINDINGS

Furniture designs examined within the scope of the study were evaluated within the framework of their Ecocentric features. In this context, 20 pieces of furniture obtained by literature review are introduced in detail below.

Broom chair is made from waste materials found in sawmills and industrial plastics factories (Figure 1). Recovered polypropylene and waste wood fibers were converted into a new wood-plastic composite. These chairs, which are produced to prevent or completely eliminate waste, also have the feature of stacking. With this feature, it not only provides ease of storage, but also minimizes the waste generation caused by packaging.



**Figure 1.** Broom Chair

**Source:** [https://www.sothebys.com/en/buy/\\_broom-stacking-chair-0bb4](https://www.sothebys.com/en/buy/_broom-stacking-chair-0bb4)

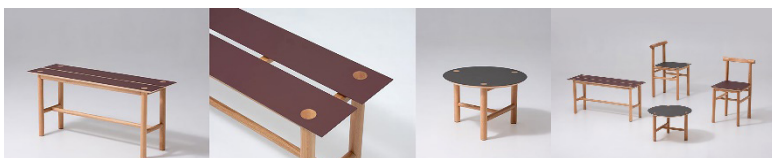
Designed with children’s ergonomics in mind, the Charlie chair is made of 100% recycled plastic (Figure 2). With its light and organic form, it is suitable for children’s use. Thanks to its water resistance feature, it is suitable for both indoor and outdoor use.



**Figure 2.** Charlie Chair

**Source:** <https://www.ecobirdy.com/collections/kids-furniture>

Dot Collection products, produced from waste generated during furniture production, encourage reuse, reduce waste generation and recycle (Figure 3). The collection, which is produced as a table, chair and coffee table, is dominated by a functional and minimal style that will suit every interior style. The linoleum board leftovers provide for a soft and warm surface on the top of the furniture. The connection between the solid wood cylinders and the surface plates gives the collection its image and name.

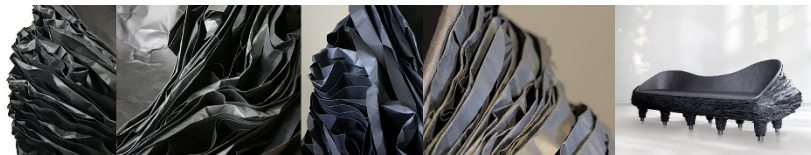


**Figure 3.** Dot Collection

**Source:** <https://www.studiopesi.com/dot>

Kibardin chair, which is produced entirely by hand, is made of paper as an example of the use of natural materials (Figure 4). Sculpture-like models are created by being inspired by organic forms in nature. Since each of the products is shaped by hand without the use of molds, all parts are different from each

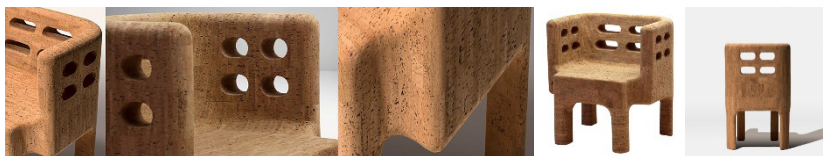
other. Each chair is numbered with designer Vadim Kibardin's unique design signature.



**Figure 4.** Kibardin Chair

**Source:** <https://www.kibardindesign.com/products/special-project/black-paper-37/>

The Sobreiro chair, which is almost entirely made of cork, emphasizes the use of natural raw materials (Figure 5). Cork is preferred because it is both an ecological and light material. Its texture, application variety and insulation properties increase the usage possibilities of the material. Cork has the ability to be obtained in line with environmental ethical principles and fully recyclable.



**Figure 5.** Sobreiro Chair

**Source:** <https://www.dezeen.com/2018/08/09/campana-brothers-cork-furniture-sobreiro-collection-design/>

Adopting an environmental design approach, Slice chair is produced from FSC certified maple and walnut plywood (Figure 6). Chairs made of materials with low VOC (Volatile Organic Compounds) content also minimize waste generation.



**Figure 6.** Slice Chair

**Source:** <http://media.designerpages.com/2011/05/slice-cafe-dining-chairs-by-graypants/>

Knot chair is a chair made from Taiwan moso bamboo, an eco-friendly and local material (Figure 7). This design, which is produced without harming the nature, is durable as well as allowing long-lasting use. It is thought that it may be difficult to obtain spare parts due to the fact that it consists of woven layers.



**Figure 7.** Knot Chair

**Source:** <https://www.prodeez.com/post/2019/04/12/knot-chair-by-qiaolin-gong>

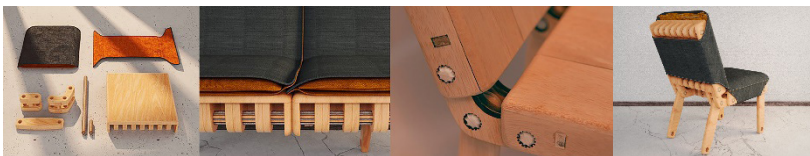
London Storage is a storage unit designed by stretching organic cotton fabrics on metal frames, unlike conventional materials (Figure 8). It offers ease of use with easy assembly and disassembly. Due to the fact that it is made of light material, it is thought that it may cause deformations in a short time depending on usage.



**Figure 8.** London Storage

**Source:** <https://www.archilovers.com/projects/92387/london-textile-storage.html>

Un-Lim Collection stands out with its modular structure and functionality (Figure 9). Thanks to its modular structure, it limits consumption habits and meets multiple needs. On the other hand, in the design that contributes to the protection of the environment, the raw materials are provided in an environmentally friendly manner and consist of nature-friendly local materials. Easy assembly and disassembly alternative also provides easy repair and repair possibilities.



**Figure 9.** Un-Lim Collection

**Source:** <https://www.designboom.com/design/un-lim-modular-furniture-system-users-change-it-over-time-05-18-2020/>

Tumble modular design is a design that allows multiple functions from sitting to storage (Figure 10). This design, in which cork, a local and environmentally friendly material, is widely used in the furniture industry



in Portugal, stands out with its lightness. On the other hand, being modular provides an advantage in easy repair and spare parts supply.



**Figure 10.** Tumble

**Source:** <https://www.yankodesign.com/2020/10/12/this-shape-shifting-cork-furniture-transforms-to-be-a-lounger-center-table-or-even-a-side-bench/>

Wreck is a design consisting of stool and table that draws attention to the amount of waste produced by China's local ceramic industry (Figure 11). In the design, the ceramic parts were left in broken pieces instead of completely pulverizing. Based on local raw materials, this design has high strength. On the other hand, the formation of layers relatively restricts the repair of deformations that may occur over time.



**Figure 11.** Wreck

**Source:** <https://www.designboom.com/design/bentu-wreck-furniture-installation-experiment-everyday-ceramic-waste-china-08-14-2018/>

Grid design is a stand that draws attention to the extravagance in the construction industry (Figure 12). The design was created from building materials that were produced in excessive amounts and thrown into nature. In the design, which aims to minimize the use of waste, waste reinforcement nets that are not used during construction and insulation panels that are deformed during transportation, cement and sand are used. The fact that this lay out, which supports the reuse of existing materials, is designed from building materials, indicates that it has a long life and high strength.



**Figure 12.** Grid

**Source:** <https://www.irenerocamoracia.com/work/people-enkpa>

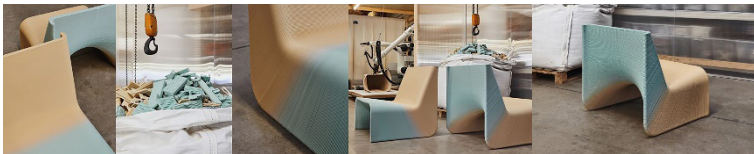
Flotsam table design focuses on environmental pollution. In the design, thousands of plastic wastes washed ashore around the world were recycled (Figure 13). This situation supports the criterion of minimizing waste use in ecocentric furniture design approach. Although it has a sculptural appearance, it can be said to be long-lasting and high-strength.



**Figure 13.** Flotsam Table

**Source:** <https://brodieneill.com/flotsam-coffee-table-2022/>

Ermis Chair, on the other hand, is a seating element obtained by recycling scrap materials by focusing on the idea of respecting nature and protecting the environment (Figure 14). Only recycled polypropylene is preferred in the design, which emphasizes the reduction of waste volume by reusing the material. This seating element, produced by the 3D printing method, is advantageous in terms of rapid manufacturability. On the other hand, it is thought that having a monolithic design in addition to its high strength will cause difficulties in terms of maintenance and repair against deformations that may occur over time.



**Figure 14.** Ermis Chair

**Source:** <https://designwanted.com/ermis-chair-the-new-raw/>

The RvR Chair is a seating element made from recycled plastic (Figure 15). The design produced by 3D printing method can be produced quickly, has a long-lasting, durable and easily stackable feature.



**Figure 15.** RvR Chair

**Source:** <https://coolhunting.com/design/studio-visit-dirk-vander-kooij/>



Industrial Craft Table is designed from polyurethane foam powder that is produced as waste after CNC milling. This non-recyclable foam powder has been adapted for reuse and turned into a durable and functional design by using some resin (Figure 16). Since the design is completely handmade, each example has a unique appearance, therefore it has an advantage in terms of repair, maintenance and repair. On the other hand, it is relatively weak in terms of rapid manufacturability.



**Figure 16.** Industrial Craft Table

**Source:** <https://materialdistrict.com/material/industrial-craft/>

Fragment is a design produced from waste marble pieces and resin of a local marble producer factory in Seoul (Figure 17). This design, which is highly durable due to the structure of the main material used, requires little maintenance and repair.



**Figure 17.** Fragment

**Source:** <https://delisart.com/product/fragment-chair/>

Burnt Cork is a seating element with organic form and sculptural appearance. It is formed as a result of carving and shaping the burnt mushrooms in the upper layer of Portugal, which is full of mushroom forests, which has become unusable as a result of fires (Figure 18). Forming cork blocks by carving creates relatively limitations in terms of spare parts supply and repair.



**Figure 18.** Burnt Cork

**Source:** <https://www.yankodesign.com/2021/08/24/this-sustainable-furniture-collection-is-made-from-burnt-cork/>

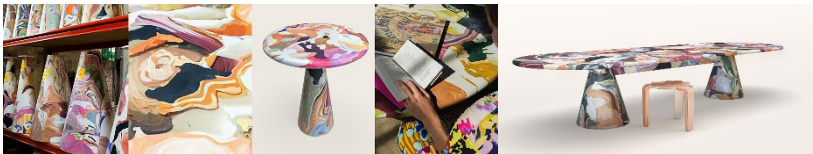
Gigas is a stool design that emphasizes waste management. It is created by grinding local food materials such as oyster shell, seaweed, and fish bone to draw attention to excessive use in the production process (Figure 19). Based on the fact that it was designed from food materials and produced as blocks, it is thought that its strength and repair possibilities are relatively weak. However, it can be said that the production speed is relatively slow due to the fact that it is handmade.



**Figure 19.** Gigas

**Source:** <https://www.dezeen.com/2022/04/11/carolina-hardh-vra-gigas-design/>

Meltingpot Table, on the other hand, is formed by recycling unused plastic chairs, vases, cabinets by adapting them for reuse (Figure 20). The table, which is produced from melted waste plastic prototypes, is as strong as marble. The fact that the top plate and the foot part are two separate parts provides the opportunity for repair, maintenance and repair.



**Figure 20.** Meltingpot Table

**Source:** <https://dirkvanderkooij.com/meltingpot>

## 5. EVALUATION AND CONCLUSION

Unconscious consumption of energy and natural resources has led to environmental degradation and irreversible damage. Minimizing the environmental problems that arise worldwide is possible with environmentally sensitive production methods. Energy used in many fields also has an important place in the furniture sector. Therefore, it is extremely important for ecosystem management to develop strategies that will encourage the efficient use of energy, natural resources and raw materials. Ecocentric design principles and methods, which are the subject of the study within the scope of environmental

ethics approach, are discussed in particular application examples. According to this; Ecocentric properties of furniture evaluated under minimizing waste, local sourcing, recycling principle and modularity are compiled in Table 3.

**Table 3.** Ecocentric evaluation of the examined samples

Furniture	Ecocentric Furniture Design Principles			
	Minimizing Waste	Local Sourcing	Recycling Principle	Modularity
Broom Chair				
Charlie Chair				
Dot Collection				
Kibardin Design				
Sobreiro Collection				
Slice Chair				
Knot Chair				
London Storage				
Un-Lim Collection				
Tumble				
Wreck				
Appropriating the Grid				
Flotsam Table				
Ernis Chair				
RvR Chair				
Industrial Craft Table				
Fragment				
Burnt Cork				
Gigas				
Meltingpot Table				

As a result of the evaluations, it has been seen that the principle of reducing waste generation and recycling is the most applied approach in ecocentric furniture production. Minimizing waste generation through waste management and recycling principle has an important share in the scope of environmental ethical principles. Therefore, the fact that these principles are included in production systems reveals that environmentally friendly production approaches are increasing day by day. In an effort to find solutions to environmental problems, it is seen in the examples examined that the designers are in search of ecological materials in addition to the existing materials. Principally in furniture produced with waste materials, waste pieces can be changed in shape, color, texture, etc. the tendency to make it visible on furniture with its features encourages environmentally friendly production. At this point, designers and manufacturers have important roles. It is the designer's liability to raise the awareness of the consumer on environmental ethics with the environmentally friendly product designs they will put forward. In this context, with the contribution of developing technology, innovations in environmentally sensitive materials and production

systems should be followed and environmental production approaches should be emphasized.

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## CHAPTER XV

# INTERDISCIPLINARY TRAJECTORIES: REGENERATING BARCELONA PAVILION WITH MIDJOURNEY

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### 1. INTRODUCTION

Over the past decade, artificial intelligence has made significant advances in the development and use of neural networks that allow computers to understand, see and hear the world around them. As the nature of everyday life in the modern world rapidly changes, so too do the various design

disciplines. These advances in the use of AI in many different fields are also being adopted in computer-aided creativity. Deep learning and/or machine learning algorithms, which have created text-to-image AI programs such as Midjourney, DALL-E, Stable Diffusion and many others, transforming your descriptions into images in a very sophisticated way, creating skyscrapers in the style of Leonardo da Vinci or the dream house you have always wanted to visualize, are also being used in the fields of architecture and interior design.

This type of artificial intelligence system, known as a text-to-image generator, converts text input, such as sentences or paragraphs, into an image that visually conveys the content of the text. To create images from text, a deep neural network is trained on a large dataset of coupled text and image samples. The network learns to recognise patterns in the data and produce visuals that accurately reflect the semantic meaning of the input text. Text-to-image generation can be done in a variety of ways, including the use of transformers, conditional generative adversarial networks (cGANs), and variational autoencoders (VAEs) (Tibebu et al., 2022). These models are capable of producing beautiful, photorealistic images that capture the meaning of the input text almost perfectly.

For us - the bemused witnesses of the artistic AI influx - the evolution of these creative processes raises fascinating questions that we have never had to ask before. As the current developments affect many different academic fields, we have come together as scholars from different disciplines to communicate and connect our similar concerns about this emerging trend called text-to-image generators. Our disciplinary specialities are architecture, interior architecture, visual communication design and communication studies. This article, as a final product of the interaction between four disciplines, offers an exploration of the creative and compositional capabilities of Midjourney.

Midjourney is basically based on existing resources, so its implementation must be preceded by the collection of data for analysis, their synthesis for categorisation and their evaluation as a final result. The data are mainly processed by interdisciplinary real users, who rely on their knowledge and experience to analyze them and carry out design actions such as architecture, interior design, industrial design and visual communication design. We took into account a number of things while selecting the text-to-image generator Midjourney.

The first is image quality. The images generated should accurately reflect the meaning of the text supplied and be of good quality. While some text-to-image generators can produce images that are photorealistic, others may produce more stylised or abstract images. In this respect, Midjourney's photorealistic

image quality meets our needs. The second reason for using Midjourney is its customisation options. It allows us to define certain details to include or exclude, or the ability to change the style or color of the images created. The third is its speed and scalability. Its response to volume and input is fast enough to meet our expectations. In addition, its interface is easy to use and gives clear instructions to the user. Another very special feature of the Midjourney is its ability to produce outputs via the Discord social messaging platform. This feature mobilizes the image production process and thus reinforces the production activity of the users. One of the vexing problems of the aforementioned design disciplines is that the client's imagination of the final product gets lost in translation between common language and design terminology. Therefore, the common use of Midjourney opens a new discussion on whether it can be used as a mediator between the expert and the client. Finally, its cost, is affordable and reasonable for the user.

Our sample prompt will be shaped around the famous Barcelona Pavilion by describing the building in our own terms specific to our disciplines. Then we are going to analyze the resulting five images following a methodology of formal analysis and try to assess if the end results confirm the disciplinary approaches in question. In the next step, we will compare these five images with each other in terms of their compositional, structural, and formal elements to see how successful Midjourney would be in understanding the perspective of an academic community.

Midjourney has the potential to be a helpful tool for research in architecture, design and communication sciences, assisting with the visualization and communication of design concepts, testing design alternatives, and producing visual aids for commercial, pedagogical and academic purposes.

## 2. METHODOLOGY

Midjourney is a text-to-image generator that turns verbal descriptions into photorealistic visuals using deep learning techniques. Midjourney does not share its computational model yet, however we believe that it has a similar one with DALL-E. Therefore it would not be wrong to assume that it has two key parts to generate images: a text encoder and an image generator. The input textual description is encoded into a high-dimensional vector representation by the text encoder. Using this vector representation as input, the picture generator creates an image that corresponds to the description. A sizable dataset of paired written descriptions and associated photos are employed to train the model.

DALL-E uses Generative Adversarial Network to produce outcomes. Generative models are using an unsupervised learning approach which means that the model is not trained with pre-matched items, but rather the network is fed with an input and then released to find interesting patterns. The two components of the network are the generator and the discriminator. Both components are fed with the same inputs. As the generator is obliged to produce new outputs, the determinator stands as a reality checker. Since the discriminator is also fed with the same inputs, it checks whether the generator's outputs are consistent with the raw inputs or in other words, whether they are real or fake. This operation continues until the discriminator is fooled (Brownlee, 2019).

The AI relies only on words to generate images (Panicker, 2022). At the same time, creation's limitation is words. Our language has limitations and a subliminal meaning underneath any language that cannot be explained (Brillhart, 2021). Therefore, using only prompts made up of words can hinder architectural creativity. Yet it could be helpful as an interface between the client and the designer.

The reason we think Midjourney is worth examining is that it is trained using an unsupervised learning approach. Lev Manovich (2018), an artist-thinker who coined the term 'cultural analytics', criticizes both data statisticians and cultural theorists for categorizing and regulating aesthetics as information interpreted from a single perspective. For Manevich, the old 'supervised learning approach', as we know it from Rutgers University's Art and Artificial Intelligence Laboratory's Creative Adversarial Networks (CAN) project, is just one extension of linear and regulatory categorisation, as in chronological angle, angle of likes, etc. The unsupervised learning approach is exciting because with this method, the machine is not yet liberated, but emancipated from human bias (Manovich, 2018). In its most succinct form, this critique is very similar to the Bauhaus critique of personal discourse. Like the Bauhausian perspective, Manovich is looking for a perspective that is divorced from history, individuals, classes, in short, the human categories we create. And the unsupervised learning approach allows machines to recognise patterns without human intervention. In this research, we will witness the journey of the knowledge bequeathed to us by the Bauhaus since the design fundamentals we are going to use in our prompts are established by this school.

The aim of this research is to assess what degree of similar outputs Midjourney can create compared to the defined space or object in the mind of the designer, or which type of prompts (containing terms used in basic design

principles) is more successful in terms of resemblance. Based on this basic problem, this study focuses on the process of re-creating the Barcelona Pavilion, which has a very important place in the architectural literature and whose image is known even by those who do not have architectural formation, with Midjourney program, and compares the images created by the definitions of the pavilion by researchers from different disciplines with the original building.

In his recently published article “*Text-to-image Generation AI in Architecture*” Yıldırım (2022) argues that this technology has the potential to revolutionize the way architects and designers approach their work. His main claim is that the text-to-image generators like Midjourney make their work more efficient, creative and faster. Yıldırım (2022:117) writes:

“...text-to-image is a powerful and versatile AI tool that has the potential to greatly improve the efficiency and effectiveness of the design process in architecture. Their user-friendly interface and ability to generate a wide range of images make it an exciting and valuable tool for architects and other creative professionals.”

Testing Yıldırım’s hypothesis, in our study, we dive deeper into the creative possibilities of Midjourney by experimenting with design terminology and everyday language. Synchronically built with the constant of our study, the Barcelona Pavilion, the world of art and design was undergoing a paradigm shift along with the rest of the world. Modernist ideas after the First World War were so influenced by the devastation of the war that modernist designers had a high opinion of the universal over the local. To operationalise this notion, of universal over local, they established design fundamentals to create a visual order capable of uniting the individual and the universal, the craftsman and the artist. The production mentality of the Bauhaus school, to which Van der Rohe, the architect of the Barcelona Pavilion, also belonged, was concerned with expression, not individual discourse (Moholy-Nagy, 2012). So the key idea to design was the methodology of design itself. And the design fundamentals were the constituents of this process.

In this study to experiment whether this universal language of design works the same way through the Midjourney system, we conducted a study targeting the results of Midjourney over the different usage of language. To achieve this, we conducted a two-stage prompt experiment with two different groups of experts and non-experts in architecture and design studies. In order to reproduce our constant, the Barcelona Pavilion, with Midjourney, the expert group has written a prompt consisting of basic design principles. (These principles are explained

in detail in the following chapter.) The content of this prompt is executed in the following order to make sure there will not be a bias as a consequence of syntax: Line/ color/ shape/ space/ texture (material) / scale/ balance (symmetry, asymmetry etc.) The second prompt is executed by non-experts through everyday language. A third prompt 'imagine/Barcelona pavilion' has been executed in order to understand whether the Midjourney database is containing our constant object.

In order to interpret the results The Vision Transformer model NLP and Normalised Cross Correlation (NCC) models are chosen to measure the image similarity between our constant and Midjourney outputs:

Among the computational models such as Mobilenet V3, Big Transfer (ICT) and Vision Transformer, which have natural language processing technology used in the field of computer vision, the Vision Transformer model (NLP) was selected and the similarity ratios obtained as a result of the image similarity calculation were used to interpret the connection between (virtual) images and (physical) reality produced within the Midjourney platform.

The numerical expression produced by the NLP model represents a complex algorithm model that is related to the field of computer vision, which groups and breaks down the pixels in the image in certain dimensions and tries to define the things that make up the content and tries to make sense of what they are. During the realization of this representation, for example, during the comparison of the Barcelona pavilion outputs we have, it performs a number of algorithmic operations in the background, such as the size of the green areas, the size of the areas with water, the volumetric proportioning of the areas contained in the colors, in the pixels, and the meaning of the objects or images that make up these areas by overlapping with each other.

The numerical expression of the similarity rate between two images using the NLP model cannot go beyond being statistical data alone. In other words, we need to visualize the reference points that we will infer while making comparisons between created images and existing images to support this statistical information. Therefore we also used the NCC model. Pixel-based methods such as NCC are more suitable for comparing images with similar patterns. This is why in our work, we used pixel-based image processing algorithms to compare and interpret the generated images. Heat maps are one of the data visualization approaches used in scientific and technical fields to visualize comprehensive data. Therefore, such an infographic was used to help identify and interpret

patterns and trends that may not be apparent from a simple set of text-based information such as the prompt we use in the programme dialogue panel.

The Normalised Cross Correlation (NCC) method, one of the widely used pixel-based methods, measures the similarity of two images by shifting one over the other and calculating the cross-correlation coefficient at each position. This is why in our work, we used pixel-based image processing algorithms to compare and interpret the generated images.

### *2.1. Design & Basic Principles*

When we try to identify the term “designing” first we have to focus on its definition. As a noun “design” is the notion of intention in thinking to planning or conceiving the form and structure of an object. As a verb “design” is to make a visible expression and/or declaration of our inner conception and imagination that transfer theoretically intelligible forms (ideas) into the material world. Thus, “design” can be defined as the intellectual activity of intentionally generating a systematic scheme for the future production of an object that is expected to fulfill a certain purpose.

Especially in design integration and optimization the basic design principles are common parameters both for all design disciplines such as architecture, interior architecture, industrial design, visual communication design, graphic design, urban design, etc.

The mentality of basic design and the way of its education is the extension of Bauhaus that was founded in Germany, 1919-1933, brought a new approach in education towards the concept of technique, technology, art, design. The main aim of this approach was to combine the mutual aspects of design. The most important innovation of this mentality is to constitute a new origin of method that is structured by some principles. Togetherness of different design disciplines, a method of working based on collaboration and integrity at the same point of view brings success.

Basic Design improves some skills of the designer in terms of enriching the content, scope, objectivity, planning and organizing the creative sensations systematically, functionally and visual awareness, visual thinking.

For analyzing and understanding the mentality of basic design, it is definitely necessary to underline 2-Dimensional, 3-Dimensional compositional organizations, basic design principles and basic design elements.



**Table 1.** 2- and 3-Dimensional Compositional Organizations

<b>2 DIMENSIONAL DESIGN (2D)</b>	<b>3 DIMENSIONAL DESIGN (3D)</b>
<ul style="list-style-type: none"> <li>• Form defining elements</li> <li>• Composition making</li> <li>• Repeat pattern design</li> <li>• Chromatic repeat pattern design</li> <li>• Bounded area design</li> <li>• Textural surface design</li> <li>• Relief design</li> </ul>	<ul style="list-style-type: none"> <li>• Solid Void</li> <li>• Assemblage - Subtraction</li> <li>• Cubic Assemblage of Volumes</li> </ul>

**Table 2.** Basic Design Principles and Concepts

<b>BASIC DESIGN PRINCIPLES</b>	<b>CONCEPTS</b>
<ul style="list-style-type: none"> <li>• Contrast</li> <li>• Harmony</li> <li>• Rhythm</li> <li>• Figure-ground</li> <li>• Balance</li> <li>• Symmetry/Asymmetry</li> <li>• Dominance</li> <li>• Linearity</li> <li>• Centrality</li> <li>• Continuity</li> <li>• Chaos</li> <li>• Hierarchy</li> <li>• Solid-void</li> </ul>	<ul style="list-style-type: none"> <li>• Transformation</li> <li>• Unity</li> <li>• Order/Disorder</li> <li>• Emphasis</li> <li>• Variety</li> <li>• Radiality</li> <li>• Transparency</li> <li>• Growth</li> <li>• Proximity</li> <li>• Additive/Subtractive</li> <li>• Flexibility</li> <li>• Repetition</li> </ul>

**Table 3.** Basic Design Elements

<b>BASIC DESIGN ELEMENTS</b>	
○ Color	Volume
○ Composition	Texture
○ Form	Light/Shadow
○ Space	Proportion
○ Material	Scale
○ Structure	Line
○ Function	Plane

**Table 4.** Visual Elements and Characteristics of Form

VISUAL ELEMENTS OF FORM	VISUAL CHARACTERISTICS OF FORM
<ul style="list-style-type: none"> <li>• Point</li> <li>• Line</li> <li>• Plane</li> <li>• Volume</li> </ul>	<ul style="list-style-type: none"> <li>• Size</li> <li>• Shape</li> <li>• Texture</li> <li>• Color</li> </ul>

## **2.2. Barcelona Pavilion**

The Barcelona Pavilion is one of the iconic buildings that has a very important place in the history of Architecture (Figure 1). It was designed in 1929 by the famous architect Mies van Der Rohe, who was chosen to represent Germany at the Barcelona International Exhibition, organized to display the industrial traditions of the 19th century. Mies undertook an important mission to showcase the industrial productivity of Germany, which was defeated in World War I, and therefore focused on how it was represented spatially rather than what was shown in its design (Martínez de Guereñu, 2018).

The single-storey Barcelona Pavilion is basically defined by two horizontal planes. One of these planes is the raised terrace that forms the floor of the building, and the other is the flat roof supported by cross-section columns (Figure 2). Between these two planes are free-standing, non-load-bearing walls (Figure 3). These marble and glass walls, some of which extend beyond the roof plane, shape the flow of the space (Figure 4). Since the location of the pavilion is on the circulation route of the exhibition, Mies gave great importance to the fluidity of the space without disturbing the continuity of the route. He also made the transition between indoor and outdoor as easy as possible (Carter, 2007).

The pavilion is reached by a few steps running parallel to the front of the building and a large reflecting pool is encountered. To the left of the pool is the main space, which is arranged with eight chrome-plated carriers and wall planes placed at regular intervals. The wall shimmering in gold, covered with eight sheets of onyx doré marble placed with a book-matching technique, constitutes the main concept of the building (Shulze and Windhorst, 2012). Even the architectural dimensions of the original pavilion were determined through the dimensions of this block chosen as a module. The main space ends with a second reflecting pool that houses the sculpture “Dawn” by German sculptor Georg Kolbe (Figure 4). Mies chose green Tinian marble for the walls surrounding the

sculpture pool, and Roman travertine for the entire floor including the terrace and the enclosing walls. Outside the marble, on the wall between the sculptur pool and the hall, bottle green transparent glass is used, and on the screen behind the hall, gray transparent glass is used. (Russel, 1986). Another element identified with the Barcelona Pavilion is the famous Barcelona chair, which was specially designed for the opening and was named after the building. This furniture, designed with button-detailed kid-skin cushions on a steel carrier, has become one of the iconic pieces of furniture history.

In 1930, the original Barcelona Pavilion was dismantled just after the International Exhibition was over. It was reconstructed in 1986 by Ignasi de Solà-Morales, Cristian Cirici and Fernando Ramos from photographs and salvaged drawings. For this reason, the structure visited today is not exactly the same as the original. There are differences in material colors, construction technology and dimensions. Nevertheless, it allows visitors to have an idea about the concept of the building and Mies' design dynamics (Krohn, 2014).



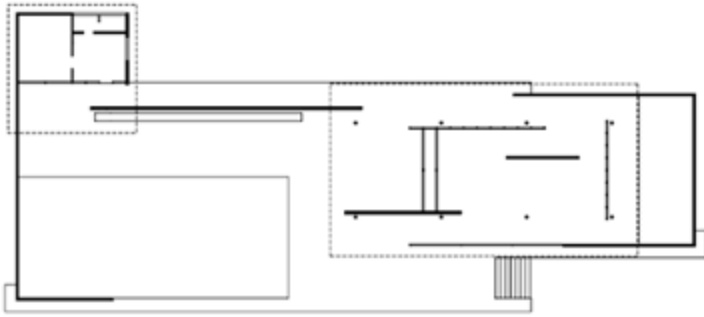
**Figure 1.** Barcelona Pavilion (Photo by Pınar Öktem Erkartal, 2014)



**Figure 2.** Main Space from the Raised Terrace (Photo by Pınar Öktem Erkartal, 2014)



**Figure 3:** Main Space of Barcelona Pavilion (Photo by Pinar Öktem Erkartal, 2014)



**Figure 4.** Plan of Barcelona Pavilion (Krohn, 2014: 76)



**Figure 5.** Second Reflecting Pool with the Sculpture (Photo by Pinar Öktem Erkartal, 2014)

### ***2.3. Different Disciplinary Approaches to Interpreting Images and Results***

The aim of this scope is to compare the common and “general descriptive” expressions and “specific descriptive” expressions used by different disciplines such as interior - exterior architecture, communication design and industrial design. The images created in the programme as a result of different professional disciplines in which they use their own professional terminology, which constitutes a “common and general” framework of descriptive expression, have been compared with the specific content that constitutes the “emphasis expression” framework. Thus results were discussed. The sample pairs are presented below along with the details and interpretation of the results generated by Demir T., Doğukanlı Ç., Kaptan M., Öktem Erkartal P. and Turgay O. The similarity ratio calculation method mentioned in the methodology and the information resulting from the visualization of the applied algorithms will be explained in the following order;

A: Similarity ratio of the studies created within the framework of Communication Design discipline and interpretation of the studies,

B: The similarity ratio of the works created within the framework of Architecture and Interior Architecture discipline and the interpretation of the works,

C: Within the framework of the Industrial Design discipline, the similarity ratio of the work created in the product scale and the interpretation of the studies.

## **3. FINDINGS**

### ***3.1. Communication Design Perspective***

The results given by the Vision Transfer Model stated below, when the image created by the researcher through entering the interface is compared with the image that is the actual physical representation of the subject.

Image similarity is a measure of how similar two images are. It can be calculated using various metrics such as mean square error, cosine similarity or Euclidean distance. In the context of deep learning models, image similarity rate can be used to evaluate how well the model is able to differentiate between different classes of images or how well it is able to cluster similar images together.

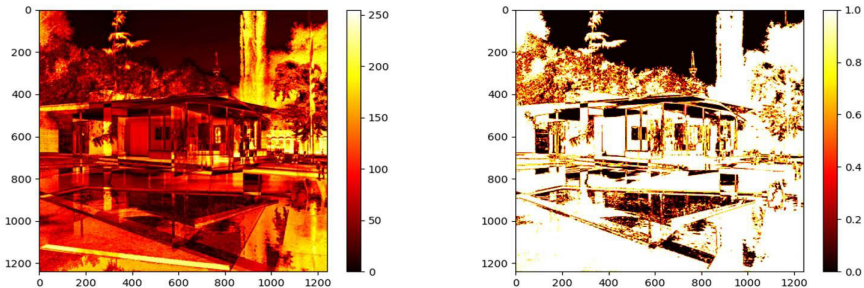
As a result of visualizing stated algorithms, the following graphs have been created. So it was seen that, one of the image's similarity rate result of % 47 (Figure 6) and the other one's (Figure 8) is around % 31. How this similarity rate

should be interpreted is grounded in the researcher’s professional background. In this process, researchers can apply manual techniques which are helpful for drawing a conclusion by juxtaposing these two images and searching for visual cues for interpretation. In this contextualized the heat map and similarity graph are helpful in supporting the intuitive - visual inference process.



**Figure 6.** Left: the Generated Image, Right: Physical - Real Representation of the Described Subject

When we compare the left image, which is created by prompts via midjourney to the real photograph of the same subject, surprisingly in the results it is seen that, instead of establishing analogy between the subjects, it establishes more similarities with the environmental conditions. We are able to easily make this reading through the inferential difference graph, which is given below. The following assumptions can be made around the overlapping of images and the removal of differentiated areas on the basis of the visuals which is given below.



**Figure 7.** Overlapping and Inferencing Graphic for Figure 6



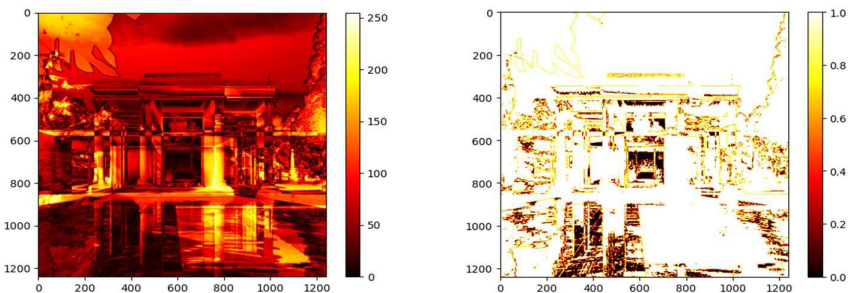
When we look at the graph above, similarity increases in areas where the comparison coefficient approaches 0. To answer the question of what these areas are, we need to take reference from the original images. When we make this matching, it is predicted that the result of non-structural descriptors that describe environmental conditions. For example, for these image pairs, the similarity of the sky increases the similarity rate.

In addition to this, as secondarily, the places that help to evaluate these images in a semantic bond are the pool area, the vertical-horizontal surfaces of the building, and the characteristic structure of the roof. When considering these areas, it is also obviously seen that the comparison coefficient approaches 0. When an evaluation is made in this direction, it is concluded that this image pair resembles each other but the analogy is established by the observer.



**Figure 8.** Left: The Generated Image, Right: Physical - Real Representation

Another evaluation was made on the second example (Figure 8), created by the researchers positioned within the discipline of Communication Design field also.



**Figure 9.** Overlapping and Inferencing Graphic for Figure 8



The algorithm run for the sample pairs shown above allows us to conclude that statement. The part that is correlated between the two samples is the image of the building reflected from the pool, i.e. the reflection alone. This is again due to the effect of unstructured descriptive expressions alone. This sample group gives the conclusion that convergence or dissimilarity to the described content may be affected by environmental factors.

### 3.2. Architecture and Interior Design Perspective

In the example (Figure 10), the similarity rate of the image pairs created by the researcher with architectural discipline was calculated as 40%. In the interpretation phase of these image pairs, it was tried to explain the effects or variables that create this value.



Figure 10. Left: the Generated Image, Right: Physical Representation

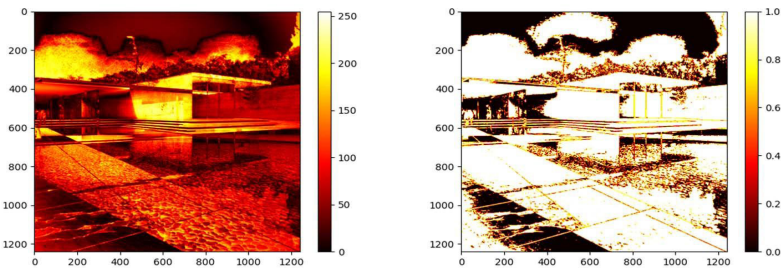


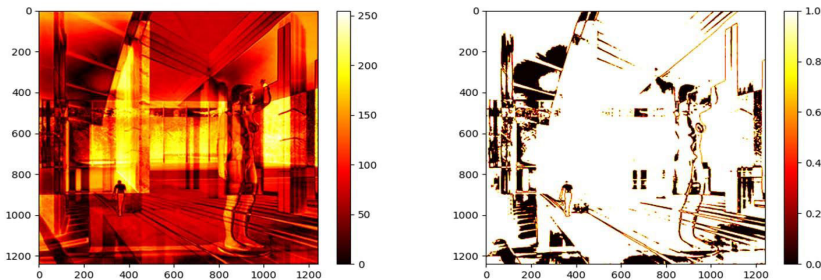
Figure 11. Overlapping and Inferencing Graphic fo Figure 10

The excess of the volumetric ratio of the areas that are similar to each other which is seen in the example above. These two examples are quite similar in these areas. When the factors that make up this area are listed in order of effect; the toning of the sky from the edges inwards (when looking at the two photographs, the toned transition of the sky areas from the outside to the inside is seen), the large planar surfaces around the pool area and the two-step staircase that provides a break from the ground. When analysed these samples, which create the perception of being quite similar to each other, we come across 2D graphical effects, as the factor affecting the result in a surprising way.



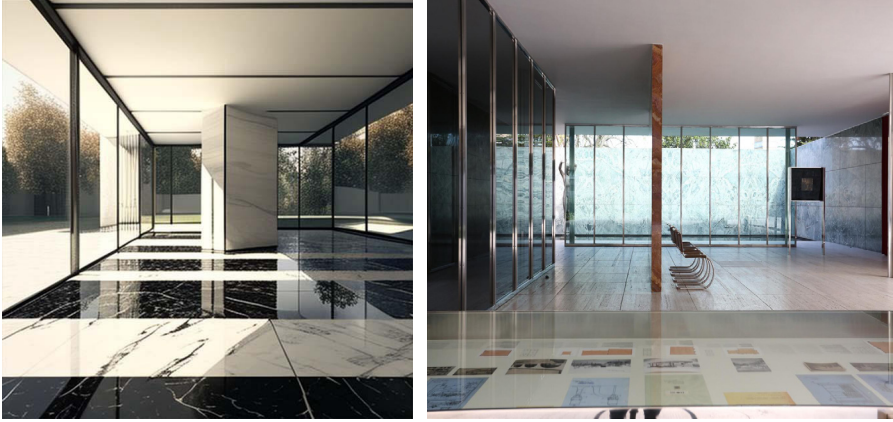
**Figure 12.** Left: the Generated Image, Right: Physical - Real Representation of the Described Subject

The Factors affecting the similarity ratio in negative way to go down % 26 (Figure 12) are categorized in that example as “none realistic things”, which does not reflect the reality such as material reflections, linearity, cartoon style etc. 2D graphical effects as factors that semantically detach the content from its own physical context. If we exemplify these effects more; charcoal, water-colour, linear forms, draft and artistic graphic style effects can be listed.



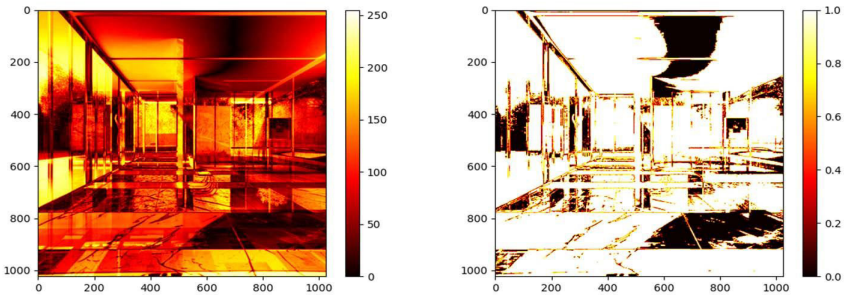
**Figure 13.** Overlapping and Inferencing Graphic for Figure 12

Similarly, in the comparison of the images created within the framework of the interior architecture discipline, the similarity rate of the sample pairs (Figure 14) compared by the researcher could reach around 55%.



**Figure 14.** Left: the Generated Image, Right: Physical - Real Representation of the Described Subject

As the reason for this; avoiding 2d effects, material and texture definitions for hyper realistic results, defining the lighting effect and feeling, trying to define simplicity and naturalness are the views that are effective on this rate.



**Figure 15.** Overlapping and Inferencing Graphic for Figure 14

The effects and places which create this similarity can be listed as follows according to the prompts; The ratio of spatial shadow-light values, the similarity of the soft-toned shadow transitions on the ceiling (compared into original ) the light reflected from the ground and the wide facades which is creating volumetric openness. In addition to this, other important topics that contribute to the formation of the similarity effect can be listed as follows; the

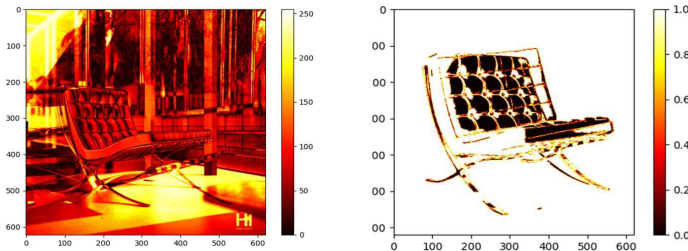
elements that perceive the material and spatial volume, the description of the building elements and the definition of the perceived space created by different dimensional planes.

### 3.3. *Industrial Design Perspective*

In the evaluation phase of the product scale, the prompts used to create a benchmark were quite simple. During the creation of the product, only the name of the architect and the name of the product tag were used as input to the command line than image created. When we compared this one into the photograph that constitutes the physical representation of the product are given in Figure 16. The similarity rate between these two visually similar products created using a single line prompt ( Figure 16) is 47%. The “designer name” and “product name” used as input tags increase the similarity rate. When we try to describe and create the same product with professional words used in the field of industrial design such as describing the material pattern, manufacturing terms and desing elements which is referring the geometrical identity etc. This affects the result very much, it makes a data visualisation outside the visually defined object.



**Figure 16.** Left: the Generated Image, Right: Physical - Real Representation of the Described Subject



**Figure 17.** Overlapping and Inferencing Graphic for Figure 16

The following assumptions can be made around the overlapping of images and the removal of differentiated areas on the basis of the visuals (Figure 16) with the over inferences which is given Figure 17. The places corresponding to the correlation coefficient value of 0, which allows us to establish a similarity relationship between the two images, are shown above. The places where the relationship between these areas and the reality can be established are; carrier structural structure, horizontal and vertical planes (sitting and leaning) textures on the material. When a similarity relationship is sought with a definition other than “architecture and designer”, the algorithm yields a value around %20. The subject was differentiated with the prompt inputs defined in line with the findings mentioned above.



**Figure 18.** Generated Differentiated Subject

Since a pixel-based non-semantic match is made here, the end user must make sense of that relationship. In this respect, the second result differs from the geometric form and material of the object to be identified and does not resemble its essence, which is shown in Figure 18. In order to obtain the closest values to the real one, a semantic study with high sensitivity should be carried out that establishes a relationship with reality.

#### 4. CONCLUSION

As a result of developing technology and machine learning studies, artificial intelligence has become more and more visible in every field. Among the design disciplines, programs such as Midjourney, Dall-E, DiffusionBee, Motionleap have potentials that can provide convenience for designers, especially in the concept and presentation stages, by providing the visualization of the desired text. These potentials have been revealed in various publications (Yıldırım,



2022) and are being put forward. However, it is an area that needs to be studied. The main findings obtained in this process are as follows: It has been observed that the prompts chosen by different researchers who have taken the formation of architecture and interior architecture to define the space are similar. The prompts chosen by the researchers who did not receive this formation differ from the others as it is discussed in the findings part of this article.

The images created in the trials, where the name, architect or architectural style of the Barcelona Pavilion were never mentioned and only the basic design elements and principles were used as prompts, remained quite far from the original. It has been determined that in the images created by artificial intelligence, color and material are more dominant than other prompts, vertical elements are more prominent than horizontal elements, and some elements (such as lighting and furniture) that are not specified by the designer are added to the image.

The images created by using prompts in which the name and architect of the building are clearly written, the architectural style is specified, and no other spatial elements are defined showed higher similarity with the original of the building. This shows that Midjourney perceives clearer and popular keywords better than more complex patterns such as the character of spatial elements or how they are articulated to each other.

The fact that artificial intelligence did not create the original structure exactly, even with multi-defined prompts, showed that it does not have enough linguistic data in the field of architecture and that it needs to be “trained” more, especially within the framework of spatial definitions.

In addition, the program failed to create the Barcelona Chair with the prompts chosen by the researcher, who took industrial design formation, to define furniture features such as material, color and form. But it visualized the chair very closely to the original with prompts where the phrase “Barcelona Chair” is used exactly. This reveals that the program is more trained and equipped with more data at the object scale than at the spatial scale.

Based on all of these, it is possible to say that it is not as easy as it seems for designers to create an image of their dreamed space or design object similar to their original idea, using the Midjourney artificial intelligence program, during the concept or visualization phase. In order to create a design similar to the desired one, it is necessary to make additional definitions such as style, inspired architect/designer, period in addition to spatial definitions. Even in this way, the image created is only a guide and it is highly possible that it is not enough to

reflect the designer's idea exactly. So Manevich's foresight of the unsupervised learning methods is not valid at least for the Midjourney platform.

As a result, with the increasing popularity of artificial intelligence programs, whether they will replace visualization programs in the spatial design process is one of the questions that led to the emergence of this article. Since Midjourney's image generating process is based on translating prompts into algorithms, we believe that it does now show full competence in creating the images that the user wants to obtain in the first place. The absence of a feature such as selecting a certain area of an image by using the interface and interfering only with that specific area are limiting factors for the user. The future development levels of the programs would directly affect and transform the answer to this question. Yet, at the moment Midjourney is just a tool that is designed to boost the creativity of designers by giving them these tool options. However, the relationship between artificial intelligence and the human creative mind is still so complex and unclear. It is possible to say that the Midjourney program is promising but rather limited in spatial visualization at the moment.

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## CHAPTER XVI

# IMPORTANCE OF STORE ATMOSPHERE IN CREATION OF CORPORATE IDENTITY IN RETAIL CLOTHING STORES: LOUIS VUITTON STORE ANALYSIS

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### 1. INTRODUCTION

The 21st century has witnessed rapid technological and communication advancements that have transformed people's lifestyles, behaviors, and consumption preferences. To stay ahead of the global competition, retail clothing stores need to distinguish themselves from other establishments in a way that customers can easily perceive. Shopping is no longer merely a means of fulfilling one's needs but has evolved into a defining aspect of one's lifestyle, providing psychological satisfaction. As a result, customers associate their choice of stores and products with their social status and identity. Customers seek stores that offer them a unique shopping experience, particularly in retail clothing stores, where they expect to derive pleasure, gain prestige and image, and have an emotional experience.

Customers now view their preferred stores and products as a way to symbolically communicate with their social environment, expressing their identities through their choices. As a result, they seek out stores and products that align with their existing identity or represent the identity they aspire to have. (Azizoğlu and Altunışık, 2012:39)

In the current highly competitive environment, the primary objective of retail stores is to cater to the evolving demands and requirements of their customers. Customers seek to purchase an image through their shopping

experience at clothing stores and the products they choose. Therefore, retail clothing stores must establish corporate identities that effectively communicate their unique characteristics, distinguishing features, and image from that of their competitors to their customers.

## 2. CORPORATE IDENTITY AND CORPORATE DESIGN

Corporate identity refers to the characteristics and functionalities that set one organization apart from others (Ak, 1998:18). A prosperous corporate identity should effectively distinguish the organization from its rivals by showcasing its unique personality and distinct features, while also conveying memorable traits that resonate with its intended audiences.

Corporate image refers to the impact of corporate identity on both the intended audience and employees of the organization. While corporate identity pertains to tangible designs, corporate image encompasses the intangible thoughts and perceptions that customers hold about the brand. A positive mental perception of the customers indicates that the corporate identity has been effectively established.

The core of the corporate identity is the corporate philosophy (Okay, 1994:60). Hence, it is crucial to align the corporate design, communication, and behavior of an organization with its corporate philosophy. The more consistency there is between these elements and the corporate philosophy, the more trustworthy and desirable the organization becomes for its customers.

The corporate philosophy serves as the foundation of the corporate identity, encompassing the institution's values, attitudes, purpose, goals, and history. As the corporate philosophy is a means of self-expression to the external environment, it plays a significant role in influencing customers' decisions to choose an institution. Customers evaluate various institutions that offer the same product or service and select the one that best aligns with their expectations. Corporations differentiate themselves from their competitors and acquire a place in the minds of target groups by revealing their differences thanks to their unique visual identities created in line with their corporate philosophy. The more compatible the corporate design, corporate communication and corporate behavior of the corporation is integrated with the corporate philosophy, the more reliable and preferable the corporation will be for its customers. A successful corporate design increases the recognizable and preferable features of the institution.

Corporate design consists of all design elements that a corporation creates in order to express itself visually and to reveal its different aspects from its competitors and to be recognized by the customers and target audiences. Corporate design components can be categorized as product design, communication design, architectural and interior design. The name, logo, building, exterior design, interior design and the outfit of the personnel working in a corporation should reflect the characteristics of the corporate identity in a way to give the right message. Corporate design shall be designed in a way that can be easily perceived by the target audience of the corporation. Corporate communication design covers all visual and written communication elements of the corporation. Hence, it is important that the elements of corporate communication are in harmony with each other so that they have an effect that reflects the identity. The elements that most effectively determine the visual identity in corporate communication are color, logo and characteristic.

Colors affects people's emotions through drawing their attention. The color used in design creates different emotions and effects on people by attributing different values and meanings to a symbol. The effects of colors on human psychology are as follows: In consumer perception, "red" connotes strong, dangerous, exciting, hot, sensual, extroverted, "green" connotes cool, calm, natural, "blue" connotes cool-calm, sad, respectable, authoritative, "black" connotes cold, respectable, "yellow and gold" connotes luxury, rich, "orange" connotes warm, natural and sincere and "purple" connotes nobility (Odabaşı and Barış, 2002: 139).

In order to communicate with their target audiences, corporations should choose a color that will reflect their identity. The colors created in line with the corporate philosophy and to be used in corporate communication should convey a meaning and emotion. The corporate color should ensure the differentiation of the corporation and should facilitate it to take place in the minds more easily. The creation of the corporate logo is one of the important parts of corporate communication. Corporations form their logos based on meaningful symbols and forms that reflect the characteristics that make them unique and incomparable. The logo is a visual symbol that represents both the corporation and its products and services. The corporate logo has the task of conveying the corporate philosophy, that is, the concept that the corporation intends to convey, symbolically and effectively to the target audiences. For this reason, it is important that the logo designed for the corporation reflects the characteristics

of the corporation, that it should be designed only for that corporation, and that it should be easy to understand and remember.

Architectural and interior design, which reflects the characteristics of the corporation, also fulfils the function of conveying meaning, conveying information and communication. Architectural and interior design, as a component of corporate design, should reflect the corporate philosophy conceptually and meet the needs of the institution functionally. The material, form, color and texture used in corporate design are the aspects that reveal the visual identity in the most effective way. While creating the spatial identity of the institution, it is necessary to determine the principles of space arrangement, to create interior work areas, to design furniture and work units. Floor, wall, ceiling arrangements of the spaces, design of permanent or temporary space-forming features, selection of industrial design features and lighting features are important for the creation of corporate design. The architectural and interior design of the institution is important in terms of the first impression that both the target audience and the employees of the institution get from the corporation. Corporate design is an essential factor that ensures the essential continuity of the corporation's life.

In particular, institutions that sell the same product and provide the same service reveal their differences and visual identities with their corporate designs. Institutions with a large number of branches become a trusted and preferred institution by repeating the architectural style, facade and interior design concept that visually explains their identity. The design language, architectural style, form, color, texture and material used by the institution in its facades and interiors, convey a meaning and concept to the customers thus making it easier for the corporation to acquire a place in their minds.

A corporation should create the visual identity in order to explain to the target audiences the identity of the corporation visually. Visual identity is the main aspect that shows, explains, symbolizes and memorizes the identity of the corporation in the most effective way. (Ak, 1998:80) The name, logo, architecture, exterior, identity and interior design of the corporation should be designed to reflect the identity of the corporation.

During the design of the visual identity of the corporation, it is important to create the interior design in line with a concept that reveals the philosophy of the corporation and to make the selection of colors, textures, materials and forms that will reflect the corporate identity correctly. During corporate design, the planning of spaces that have unique functions or require unique forms, as well

as the organization of spaces that are flexible to use and can be changed, should be considered and planned. In establishing a relationship between spaces, spaces with similar functions can be grouped in clusters or spaces that repeat each other linearly can be created. Natural light, ventilation forms and the relationship between the spaces and the exterior should be considered. Special solutions should be produced for spaces that require privacy. In space organization, functional proximity, dimensional requirements, association of spaces according to hierarchical importance, traffic solutions between spaces, requirements such as light and view should be arranged according to the necessities program.

Various spatial effects can be created by using basic design principles in interior design. For example, a definite and stable effect can be created by using elements of equal visual weight symmetrically placed around an axis. Thus, a monumental, formal, static, restful perception can be created in the space. However, excessive use of symmetrical balance can sometimes reduce the power to maintain interest in the space and create a boring and insincere effect. Especially in corporations that want to symbolize power, corporate design can be achieved by creating symmetrical balance. In order to create a flexible and active effect in the space, elements with different sizes, shapes and colors and therefore with different visual weight can be organized to create an asymmetrical balance. A center of interest, which is an emphasis and focal point, can be found in every corporation. In design, a space that is a focal point in terms of location, value, size or material, color and texture can be created. For example, in a store, a sales counter, display element or safe that is desired to be emphasized can become a focal point. The effect of hierarchy through size, shape and position can be used to bring attention to a certain area within the store. For example, one space or piece of furniture can become dominant by being significantly differentiated from the others in size, shape or position. An area in the store that is larger in size than other spaces or has a different shape and color creates hierarchy and customizes that space. Repetition of forms, colors and textures in the interior creates rhythm. However, too much repetition can cause loss of interest by creating monotony in the space. For this reason, changes in the size, direction or color of the forms in the design contribute to the formation of a more dynamic and active space by creating continuity. Creating contrasting effects in colors and forms adds excitement and dynamism to the space by creating contrast. A sense of unity is achieved by using the effect of similarity in the space, while the effect of diversity is used to give the space attractiveness, vitality and diversity.

### 3. STORE ATMOSPHERE

The store atmosphere encompasses the visual, auditory, tactile, gustatory, and olfactory expressions that a store employ. Each store creates its unique atmosphere based on the identity it seeks to project. Interior design elements, such as materials, colors, textures, and forms, are the most effective factors in shaping customers' perceptions of the store atmosphere. Additionally, factors such as scent and music also play a role in influencing customers' perceptions of the store's interior. Some stores are perceived as lively, dynamic, and comfortable, while others may be considered dull, suffocating, or ordinary.

It is widely acknowledged that the store atmosphere plays a crucial role in customers' decisions to shop and make purchasing decisions. In stores with a positive atmosphere, customers are inclined to spend more time and have an enjoyable shopping experience, leading to a more favorable evaluation of the store's products and services and an increased likelihood of making purchases. (Dursun, Oskaybaş and Gökmen, 2013:236).

To reflect the corporate identity and concept abstractly, the exterior of retail clothing stores should be designed using appropriate forms, materials, colors, and textures. The store's name and logo should be positioned on the facade to define the entrance. When designing the store atmosphere, both practical and aesthetic functions should be taken into account. Practically, the store should be designed to allow customers to move around and perform actions effectively and comfortably. This includes ensuring that the store's showcase is easily perceivable, the entrance is inviting, products on display are visually and tactilely accessible, trial cabins are comfortable and convenient, and cash registers, warehouses, stairs, and elevators are easily reachable and visible. Additionally, the store's lighting and ventilation systems should support the overall atmosphere. Using basic design principles (such as axis, balance, rhythm, contrast, symmetry, asymmetry, focal point, hierarchy, harmony, and composition), the interior design should reflect the store's concept and atmosphere. The choice of materials, forms, colors, textures, and reinforcements for the flooring, wall, and ceiling surfaces also plays a crucial role in creating an aesthetically pleasing environment.

Interior design should be done by using basic design principles (axis, balance, rhythm, contrast, symmetry, asymmetry, focal point, hierarchy, harmony, composition, etc.) in line with the concept that will reflect the store atmosphere. Basic design principles are the principles used by the designer



and help to create different perceptions in the space. Different effects can be achieved by creating symmetrical, asymmetrical or radial balance in interior design. By creating repetition and continuity in forms, colors or textures in the space, integrity can be created in the atmosphere of the space. Sometimes the space or object to be emphasized can be transformed into a focal point with a different shape, size, color and location.

The auditory and olfactory elements present in a store have a significant impact on its atmosphere. The music played in a store plays a crucial role in customers' purchasing decisions, as different music genres can affect customers' moods and receptivity to commercial messages. Furthermore, music influences the length of time customers spend in a store, with slower tempos encouraging customers to stay longer than up-tempo music. Similarly, the scents present in a store can also contribute to the overall atmosphere and affect customers' emotions and purchasing behavior. (Orel, 2006: 5)

The store atmosphere consists of both intangible and tangible features of the store. (Ustaahmetoğlu, 2010:156). The store atmosphere encompasses both tangible and intangible elements. Tangible elements include the store's location, architecture, facade design, interior design principles, display elements, materials, color, texture, form, lighting, temperature, sound, and smell. On the other hand, intangible elements are the emotions that customers experience in the store, such as excitement and satisfaction with the shopping experience. In-store shopping allows customers to fulfill their desire for a certain social status symbol, and as a result, they identify with the store's identity and integrate themselves with it.

The ambiance of a place can be divided into two categories: the intended ambiance and the perceived ambiance. The intended ambiance includes the visual, tactile, auditory, and olfactory elements in a space, while the perceived ambiance is about how customers interpret the space. The greater the harmony between the intended and perceived ambiance of a store, the more successful its ambiance is perceived to be. (Dursun, Oskaybaş ve Gökmen 2013:236)

The fact that retail clothing stores have a unique atmosphere that reflects their identities positively affects customers' perceptions of the store and their shopping decision.

Successful store atmospheres result in prolonged customer visits, the formation of positive brand associations, and an increased desire to shop. Therefore, retail clothing stores must create an atmosphere that expresses their unique identity and sets them apart from competitors.

The visual identity of the store plays a crucial role in customers' purchasing decisions. The exterior design of the store serves as a critical element in attracting customers and encouraging them to enter. The window displays and entrance should be designed to create a visually striking identity that impresses customers. The primary goal of the exterior design is to reflect the store's identity, capture the attention of target audiences, and attract them to the store. The exterior design can also assume a symbolic function that reflects the identity of the store. The storefront, emblem, logo, showcase, and entrance door are some of the most important elements that communicate the store's identity. Depending on the store's objectives, the exterior and showcase can be either transparent, allowing the interior to be fully perceived, or completely enclosed.

The interior design of the store should fulfill its intended function while being consistent with the concept that reflects the store's identity. The design must consider the dimensions of the interior, the type of exhibition, the spatial relationships between areas, the circulation areas, and spatial organization.

With the appropriate layout, it is possible to guide customers in the direction they desire when they enter the store. When the locations are well-arranged, customers are given the freedom to choose their path. (Demirci, 2000:3). When creating the store layout, it is important to identify the necessary actions and develop a functional chart that properly links each function. The relationships between different spaces and circulation areas should be organized in a manner that enables customers to easily navigate the store and move around with ease.

A well-designed functional layout for a store enhances the shopping experience for customers and can boost sales performance. Properly arranged circulation areas within the space are crucial to achieving this. It's important to note that barrier equipment should be avoided in the main circulation area. (Kachaganova,2008:69). Planning the display elements, resting areas, test cabinets and cash registers in the store are among the important factors for a successful perception of the store atmosphere. For easy access to stairs and elevators in multi-storey stores, planning and directing from the ground floor to other floors should be done well.

The store atmosphere variables were categorized by him into three groups: outdoor variables, indoor layout variables, and human element variables (Turley and Milliman,2000:194) Outdoor variables in a store's atmosphere include features such as the location and surroundings of the store, its architecture, exterior and signage, entrance, showcase, the height of the building, size, and color of the store.

The general layout and design elements of a store fall under the category of interior layout variables. This includes the creation of separate departments within retail clothing stores, designing and positioning display elements, a grouping of products, and planning and designing areas such as the cash register, waiting areas, locker area, and in-store circulation. All of these factors are important in establishing the overall atmosphere of the store.

Color, texture, and materials used in interior design, furniture design, ceiling composition, and lighting design, selection of wall and floor materials contribute to the formation of the atmosphere of the space. In addition, the ambient smell used in the store, the music playing in the store, and the ventilation and air conditioning conditions of the store affect the formation of the atmosphere of the place.

One well-known design decision that can increase sales efficiency is the way products are displayed in a store. In retail clothing stores, this is achieved through the creation of separate sections for women, men, and children. The design of display elements should also be tailored to the characteristics of the clothing and accessories being sold. By presenting products in an eye-catching way, customers are more easily able to perceive them. Display elements can also serve additional functions, such as routing, storing, and separating product groups within the store. (Özkan,2009:32)

The interior space and its constituent elements form a three-dimensional structure. The relationships between objects in the perceived space are established based on principles such as proximity, similarity, continuity, and closure, thereby contributing to the overall concept of perception. The perception of volume is influenced by the horizontal and vertical axes, with different dimensions being perceived depending on the observer's location within the space. (Göler, 2009:74)

When designing an interior space to reflect its identity, the shapes of its surfaces and the design of display elements play a crucial role in determining the overall atmosphere of the space. The location of the display elements and their relationship with the surfaces of the space define its boundaries. Formal continuity and similarity in the design of exhibition elements and space contribute to the formation of a unified identity. Design elements of varying shapes, sizes and locations can be used to create a focal point and capture the attention of customers within the space.

To enhance the atmosphere of the store, seating elements can be strategically placed for customers to rest and relax. In stores that specialize in footwear, for

example, strategically placed seating groups can allow customers to try on and test out shoes, creating a more immersive shopping experience.

The fitting rooms are crucial in creating a good store atmosphere and influencing customers' purchasing decisions. Each department should have enough fitting rooms that are comfortable in size and well-ventilated with proper lighting. Fitting rooms should also have seating, suspension elements, and full-length mirrors placed at different angles. Additionally, an area with full-length mirrors can be created in front of the fitting rooms for customers to easily inspect the clothes.

The cashier section, which is the point where the shopping process ends in stores, is an important element that reflects the atmosphere and identity of the store. For this reason, the cashier should be planned in a location where customers can easily reach and see it. In some stores, the cashier can be solved more secretly in a special area due to the concept. For the cashier area to create a positive image in the minds of the customers, it should be ensured that it allows the required number of salespeople to work in terms of size and that it has a design that will enable the customers to make the payment process easily. The cashier section should be designed with a form, color, texture, and material that reflects the general atmosphere of the store. (Özkan,2009:52)

The store design should reflect the store's identity and image by planning colors, textures, materials, and forms in line with a concept. Interior design elements such as the floor, ceiling, and wall materials guide and define the space while also affecting its atmosphere. Display units should be designed and illuminated in a way that highlights the products to be sold.

To ensure the coherence of the store, the ceiling design should correspond to the functional zones within the store, with particular attention to general lighting. The design of the ceiling, including its form and material, should help distinguish between the display areas and the circulation areas. The materials chosen for the ceiling and floor designs cannot only impact the perception of space but also serve as a guiding element.

Having artwork and installations that align with the identity of the store can enhance the atmosphere of the space and provide customers with a unique shopping experience. Including elements such as cafes and restaurants that complement the brand's identity within the store not only promotes customer engagement with the brand but also offers a space for extended socialization.

The atmosphere of a store can also be influenced by the appearance, attitudes, and behavior of the personnel working there. When the staff members

dress in a manner that aligns with the store's ambiance and behave in a manner that reflects the store's identity, it can positively impact the customer's perception of the store.

#### **4. LOUIS VUITTON STORE CORPORATE IDENTITY AND STORE ATMOSPHERE**

In 1860, Louis Vuitton established a store in Paris selling travel bags, featuring his renowned chest model, thereby creating his own brand. The brand's objective is to mirror its youthful, rebellious, dynamic, and futuristic identity through its designs. Louis Vuitton aims to be a renowned brand that sustains and advances its proven quality while preserving its innovative and youthful spirit. The brand's motto, "Live and Love the Truth," encourages customers to live their lives fully and pursue their passions. "The Truth" refers to the brand's commitment to honesty and transparency in presenting its products, assuring customers of their exceptional quality. Louis Vuitton has collaborated with renowned designers and architects to craft the corporate identity and store ambiance of their flagship stores, providing the latest and most deluxe shopping experience in major cities globally. These designs symbolically communicate concepts such as "dynamism," "entertainment," "power of workmanship and quality perception," "timelessness," "innovation," and "statuary stance" to the target audience through the visual identity it produces. The analysis focused on the atmosphere of Louis Vuitton's stores in Seoul, Osaka, and Tokyo.

##### ***4.1. Louis Vuitton Maison Seoul Store Atmosphere***

Designed by architect Frank Gehry as the flagship store in Seoul, the capital of South Korea, the "Louis Vuitton Maison Seoul" has a store atmosphere that successfully reflects its corporate identity to its customers.

The façade of the Louis Vuitton Maison Seoul Store embodies elements of Korean culture through its design. The curved glass façade, situated on a white cubic structure, draws inspiration from traditional Korean architecture and the white garb worn by cultural dance performers. The dynamic entrance hall, featuring zigzag glass panels and undulating glass surfaces, adds a sense of lightness to the building by creating a striking contrast with the solid white mass. The shop façade reflects the movements of a dancer performing traditional dance figures in white clothes. Curved glass panels, specially molded and designed, were mounted on the metal cage and created a lightning effect on the structure.

The movable glass facade created with glass sits on a white solid mass. The contrast effect created between the glass facade and the stone floor strengthens the weightless, flying effect of the building.



(Photograph 1) Façade of Louis Vuitton Maison Seoul Store

Source: <https://www.arkitektuel.com/louis-vuitton-maison-seoul/>



(Photograph 2) Louis Vuitton Maison Seoul Store interior design

Source: <https://www.arkitektuel.com/louis-vuitton-maison-seoul/>



Architect Peter Marino designed the store's interior to create a cozy home-like atmosphere where customers can comfortably spend extended periods. The space features sitting areas where customers can unwind and fully experience the ambiance. The entrance area boasts a grand height that impresses customers, while the smaller, secluded spaces surrounding the main atrium provide an intimate and private shopping experience. On the ground floor, the store showcases men's clothing, while the first floor displays women's clothing and accessories. The second and third floors feature a covered terrace area for hosting special events and dinners. Floating stairs connect the display areas to the terrace, which also doubles as a vertical exhibition space for showcasing works of art.

The store's interior is designed to be dynamic and playful, featuring numerous artworks in addition to the brand's own designs. Sculptures and installations are strategically placed throughout the space, creating an interactive and engaging atmosphere for customers. The use of digital objects further enhances the graphic expressions in the space. Specifically, installations are meticulously planned to serve as defining elements of the atmosphere, as they are a form of art that is specifically created to utilize and complement the space.

The store's dynamic effect is created by a combination of factors, including gallery spaces of various sizes, varying ceiling heights, and transitional spaces with different heights. Additionally, the use of fabrics such as velvet and satin on the furniture enhances the colors and textures in the space. The combination of polished walnut furniture, sculptural seating elements, and various horizontal and vertical coverings come together to create a unique composition that showcases the store's atmosphere through a variety of textures. A fragrance has been designed for the Louis Vuitton store, which is perceived by the shoppers and becomes the symbol of the store. The sophisticated and unique scent of the institution, which has been designing leather bags and suitcases since the past, brings to mind the atmosphere of the place and the Vuitton brand every time customers feel it.

#### ***4.2. Louis Vuitton Maison Osaka Midosuji Store Atmosphere***

The facade of the "Louis Vuitton Maison Osaka Midosuji" store designed by architect Jun Aoki in Osaka, was designed to give the impression of a ship floating on the water. Inspired by the undulating sails of traditional Japanese merchant ships, the shop front is light, and airy and offers a visual identity effect reminiscent of the curved white sail. To achieve this effect, ten curved



glass panels were utilized, creating a light and airy shop front with a distinctive, curved white sail-like appearance. The use of metal materials on the ground floor level further accentuates the contrast between the transparent facade and the surrounding area. Inside the store, the marine spirit of Osaka is reflected in the design, with a spacious atmosphere that evokes the feeling of shopping on a large sailboat. Wooden materials on the floor, columns, and ceiling reinforce this impression, creating the effect of a ship deck. The store, which consists of four floors, displays historical objects and contemporary art from the Louis Vuitton archives, as well as clothing and accessories. Traditional materials such as Japanese woodwork and origami paper are used in the large display areas and small spaces of the store. In addition, to reflect the spirit of the ship (atmosphere) in the interior, raw wood textures, teak wood, and fabric textures preferred in maritime were preferred. In the interior, the display areas are combined with intimate seating elements and are positioned in a way that allows the customers to perceive the works of art and spend time. On the top floor of its store, there is a cafe bar, and restaurant with a large terrace. While terrazzo floor material reflecting the sea effect is used in the bar area, the colorful decorations on the roof that refract the sun's rays give customers the feeling of traveling on a ship's deck.



(Photograph 3) Façade of Louis Vuitton Maison Osaka Midouji

**Source:** <https://www.dezeen.com/2020/02/21/louis-vuittons-flagship-osaka-store-covered-in-curving-glass-sails/>



(Photograph 4) Louis Vuitton Maison Osaka Midosuji interior design

**Source:** <https://www.dezeen.com/2020/02/21/louis-vuittons-flagship-osaka-store-covered-in-curving-glass-sails/>

### *4.3. Louis Vuitton Ginka Namiki Tokyo Store Atmosphere*

Architect Jun Aoki designed the Louis Vuitton Ginka Namiki store in Tokyo, Japan, to reflect the sparkling, rhythmic undulation of the city's seawater onto the store's identity. To achieve this effect, the façade is comprised of curved dichroic glass panels that create a dynamic, undulating water-like appearance. By separating daylight into different colors, the dichroic glass panels reflect light in a way that produces different effects at different times, making the store more visually striking for customers. Additionally, large jellyfish figures made from the same glass material used in the store's showcases reinforce the water concept and add to the store's overall ambiance.

The interior designer, Peter Marino, created a staircase for the store with an organic form that serves as a focal point while connecting the floors. The staircase features a wooden structure and glass balustrades. The whitewater effect and the flowing feeling of the interior concept are used formally in the design of the display elements and the design of the ceiling panels, ensuring continuity in the atmosphere of the space. The effect of softened corners, and oval and wavy forms is also striking in furniture design. In the interior of the store, the texture and curved surfaces of the walls, and furniture designed with wood and glass materials create a fluid effect by supporting the atmosphere of the store. In the interior, different forms, textures, and colors are used together to reflect the diversity of underwater creatures. Different patterns were preferred on the seating groups, and floor and wall surfaces used.

The store spans seven floors, with the first four floors divided into separate departments for women's and men's clothing and accessories. Other floors feature cafes and private seating areas for customers. In the women's section, pink and orange hues are prominent for men's products, while red, turquoise, and lemon tones are used throughout the space. Artwork and installations are also incorporated throughout the store to enhance the shopping experience for customers.



(Photograph 5) Façade of Louis Vuitton Ginka Namiki Tokyo

Source: <https://www.dezeen.com/2021/03/25/jun-aoki-associates-louis-vuitton-ginza-namiki-tokyo/>



(Photograph 6) Louis Vuitton Ginka Namiki Tokyo interior design

Source: <https://www.dezeen.com/2021/03/25/jun-aoki-associates-louis-vuitton-ginza-namiki-tokyo/>

## 5. CONCLUSION

Louis Vuitton stores have succeeded in reflecting the innovative, young, colorful and dynamic identity of the corporation to its target audience with various designs created in the atmosphere of the space. Especially the flagship stores located in important cities of the world are symbolic sculptures that convey their corporate identity to their customers with their exterior identities. The characteristics of cities with different cultures and identities are also integrated with the corporate identity and reflected on the store exteriors by the designers. The brand understanding, which aims to take new journeys with the needs of the user, can be traced on the facades with different and unique and characteristic identities. In exterior designs, artists have used different materials, forms and textures to reflect their design language and have created living sculptures that can be entered in each new exterior design. The dynamic and innovative effect on the exterior is reflected in a way to attract the attention of the target audiences. Repetitive, fragmented and asymmetrical exteriors are designed to support the corporate identity by using materials such as natural stone, glass, metal, wood, moving and glossy surfaces, and organic forms.

An innovative, young, colorful and dynamic visual identity has been created with the form, color, texture and material used in the interior design of Louis Vuitton stores. Customers experience an unforgettable and more enjoyable shopping experience with the exciting, intriguing effects and innovative designs created in the atmosphere of the space. The artworks in the interior space increase the emotional interactions of the customers. The artworks in the store enhance the experience in the space and culturally nourish the customers. Customers feel privileged and special for having this unique experience. The presence of places such as cafes and restaurants in the store, where customers can spend more time and socialize, allows customers to feel special and privileged and to integrate with the brand and the place.

In the interior design of Louis Vuitton stores, elements with different visual weight, size, shape and color are organized in an asymmetrical balance to create an active, dynamic effect in the space. In the interiors of Louis Vuitton stores, display elements, installation and art works, special collection furniture and stairs are designed as focal points to attract the attention of the customer. Some spaces and furniture in the stores are differentiated in size, shape and color to attract attention and create a dominant effect. Thus, by using the design principle of hierarchy, that space and its actions within the store are customized.

In the interior design of Louis Vuitton stores, the repetition of forms, colors and textures used in line with the corporate identity creates a rhythm effect. In interior design, the changes in the size of the forms and colors created gradually create continuity and contribute to the perception of the spaces as more active and dynamic. In interior design and furniture, contrasting effects are created in colors and forms, creating a contrast effect and adding a sense of excitement and dynamism to the space. By using similar forms and colors in the space, a harmony is achieved by creating a sense of unity, and sometimes the space is given attractiveness and vitality with the differences made by using the effect of diversity.

Analyzing the examples of Louis Vuitton stores, we understand that there is a strong corporate identity work that reveals the corporate philosophy. The exterior and interior design of the stores of the corporation offers a successful corporate design to its customers. Louis Vuitton stores manage to take place in the minds of customers and target groups with the visual identity they create and reflect a unique identity by differentiating from their competitors.

Retail clothing stores are the places where customers encounter with brands and products. Within the increasing competition conditions, the primary goal of retail stores should be to explain their corporate identity to their target audience with an appropriate space atmosphere. The created store atmosphere should both allow customers to have a pleasant shopping experience and leave a positive impression in their minds by conveying the corporate identity to their customers. The visual identity revealed by the store atmosphere should create an emotional effect on the customers and allow them to identify with the store products and spaces. The store atmosphere should enable the customer to perceive and remember the corporate identity of the store. Thanks to the store atmosphere, customers prefer the store, buy its products, have the experiences offered and create a loyalty towards the store. For this reason, retail stores should be designed in line with the concept that will reflect the store atmosphere in order to leave positive traces in the minds and emotions of their customers.

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## CHAPTER XVII

# FLEXIBILITY AS A DESIGN CRITERION IN RESIDENTIAL INTERIORS

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### 1. INTRODUCTION

Users are dynamic subjects. Users experience problems in buildings that lack the capacity for change and adaptation. Users demand qualified spaces that adapt to changing living standards for social, cultural, and economic reasons. It is an important problem in the housing design that residences, especially as the main living space, do not respond to users' needs, who cannot intervene in their living space.

Housing provides shelter and meets its users' physiological, psychological, and emotional needs. Therefore, we should consider housing and housing design in a multidimensional way. We need to develop housing designs that are changeable, adaptable, and flexible. In order to have changeable housing designs, we need to incorporate flexibility into the design and use processes. At this point, flexibility with sub-extensions (personalization, belonging, freedom, sustainability, and economy) offers a solution to this problem as a design criterion.

Flexibility is a multidimensional concept that includes sub-concepts addressed by different disciplines. Flexibility means having the ability to change, to bend and flex easily, to be easily adaptable to different conditions, to bend easily without breaking, and to be willing and able to compromise.

In its most general definition, flexibility in design is the ability to ensure the correct relationship between user needs and space and the adaptation of the resultant spaces and spatial organization to changes in conditions, function, and technical aspects in the process. Flexibility is an approach to design that includes

spatial and structural strategies to meet the needs in the face of changes in the process. With these characteristics, flexibility is a universal design criterion that manifests itself in the design, the theory, the practice, the planning, and the urban space.

This study focuses on the influence of modernity and the need for housing programs to provide mass housing in the 1920s, the technologies developed in the 1930s and 1940s, the movements toward participation and user involvement in the 1960s and 1970s, and the resulting trends toward flexible space solutions and flexible approaches to housing. A framework for the basic concepts of flexibility in housing design and how they can be reflected in design is created by examining the concept of flexibility and its sub-concepts, its development throughout history, and examples of flexible housing. Examining and evaluating the approaches, discourses, and works of prominent designers in flexible housing design is crucial. In this way, we believe it will be a reference for today's approaches to housing design and production to see the potential of flexibility in housing design.

## 2. THE CONCEPT OF FLEXIBILITY

The concept of flexibility was introduced into architectural terminology in the early 1950s. Although some aspects of flexibility in design were often included in buildings produced in earlier years, the concept of "flexibility" began to be accepted as a design principle in the 1950s.

The concept of flexibility, a product of the modern architectural movement, gained importance after these years. It added the elements of "time" and "the unknown" to design and breathed new life into functional architecture (Colquhoun, 1990; Forty, 2000). In the 1950s, in parallel with the rise of socialist thinking and public interest in architecture, urban design, and planning in the western world, concepts such as communication in design, the role of the user, and accessibility were frequently discussed. The concept of flexibility was evaluated as a quality criterion in a broad framework (İncedayı, 2008). According to these characteristics, the concept of flexibility has been addressed broadly. Various studies related to the concept have been carried out in theory and practice.

Walter Gropius was the first to put forward his view on flexibility in 1954 (Forty, 2000). Gropius brought flexibility to the agenda in the post-war years and expressed flexibility as a natural and uncontroversial method for successful

architecture. According to him, "...the architect should conceive buildings not as monuments but as receptacles for the flow of life which they have to serve, and that his conception must be flexible enough to create a background fit to absorb the dynamic features of our modern life." In the following period, discourses about the concept have multiplied.

The development of the concept of flexibility and its subconcepts, and the creation of a framework for its design implications, began with examining historical definitions of flexibility and developing a theoretical framework. According to Schulz (1963), flexibility is the growth or shrinkage of a building without losing its integrity through adding or removing elements. According to Weeks (1964), flexibility is undefined architecture, growth, and change, as well as indeterminate architecture, which is not changeability - unchangeability but rather the lack of attachment of the building form to any function or capacity. According to Collins (1965), flexibility is a kind of functionalism, a closed circuit whose flexibility is determined by the architect and specialized for not one but several configurations. According to Tapan (1972), flexibility is the ability of the same design unit to respond to different user needs without changing the building system and the possibility of utilizing the exact volumes for more than one function. According to Habraken (1972), flexibility is the ability to change spatial arrangements and floor area by adding a new structure or changing the boundaries of units. According to Atasoy (1973), flexibility is the ability to adapt and meet changing needs with minimum effort. According to Rabenek, Sheppard, and Town (1974), flexibility is the ability of the structure to offer choice and customization. According to Oxman (1975), flexibility is adapting to changing conditions. According to Yürekli (1983), flexibility is the ability to change shape with the ability to return to its original shape, continuous change, or continuous adaptation to change. According to Hertzberger (1991), flexibility is an open-ended solution. According to Groák (1992), flexibility is the ability to make adjustments and changes necessary for different physical arrangements and social uses. According to Gök (1993), flexibility is the ability to change and create different plan types. According to Altaş and Özsoy (1993), flexibility is the ability to adapt without making physical changes and to make changes in the interior space based on zoning decisions. According to Koolhaas, Mau, and Werlemann (1995), flexibility creates a wide-margin capacity that enables different and opposing interpretations and uses. According to Forty (2000), flexibility is an illusion that architects can control their projects in the future. According to Friedman (2002), flexibility is mobility and freedom,

while according to Deniz (2003), it is the ability to change the elements and relationships of a building system. According to Votava (2006), flexibility is physical adaptability, the ability to fold, assemble, combine, and decompose. According to Schneider and Till (2007), flexibility is the ability to provide physical changes in the structure, the diversity of units, and the adaptability and changeability of units over time as quick solutions for movement and change. According to Habraken (2008), flexibility is the modification, adaptation, diversity of use, and freedom. According to Kronenburg (2011), flexibility is adaptability, mobility, transformation, and interaction. According to Kızmaz (2015), flexibility is transformation, adaptation, mobility, modularity, and change, while according to Okutan (2020), it is transformation, adaptability, modularity, mobility, and inclusiveness.

Different authors have addressed the concept of flexibility in different ways. The definitions of flexibility at the structural, spatial, or equipment level suggest that the aim is to reach changeable solutions that meet user needs at the maximum level and create spatial constructions that can be adapted for different uses.

In light of all these discourses, flexibility in design is the ability of the building to meet the requirements that arise with changes depending on the dynamic structure of the user, function, technology, time, and structural features within the rhythm and speed of life in the temporal dimension and to adapt to the process.

### **3. RESIDENCE AND FLEXIBILITY**

Residences are a shelter that fulfills a basic need of people and a formation that has social, economic, and spatial meaning for society (Dostoğlu, 2000). Rapoport (1969) states that the primary purpose of residences, whose passive purpose is to provide shelter, is to create the most suitable environment for human life. In other words, residences are social and spatial units. In addition to accommodating the physical and visible functions of the users, residences meet their behaviors, values, and needs developing through cultural and social conditioning (Ersoy, 2002). These needs are the conditions that must be met in order for users to fulfill their actions effectively (Atasoy, 1973). According to Ünügür (1973), users' needs are the uncompromising conditions that the environment must have for users to fulfill specific actions. The welfare of the individual and, gradually, of the society is possible with the satisfaction of the needs established within the framework of these norms (Eyüce, 1991).

Residences contain many actions that change and diversify depending on many factors, resulting in changes in the expectations and needs of users. Needs, like satisfaction, differ according to the person, time, social measures, expectations and living conditions (Kurak Açııcı, 2014).

Meeting the needs of users is the primary purpose of design. In this context, we need to address the concept of flexibility in housing design to meet the changing needs of users with changing conditions.

In their most general definition, flexible residences adapt to changing needs and patterns for social, cultural, technological, and economic reasons. In contemporary housing design, users prefer flexible spaces for multiple functions (Kurak Açııcı, 2015). Flexible residences allow users to participate, personalize and liberate the space. Flexible residences are changeable and transformable systems with different alternatives and encompass pre- and post-use opportunities.

Users can use flexible residences in different ways. Flexible residences have design and construction components that offer the possibility to modify the rooms themselves and to change the whole structure, combining units and making interior changes.

Starting with traditional settlements, flexibility has been an integral design approach in contemporary housing design. The necessity of flexibility in residential design can be explained by user-related and technology-related factors, economic reasons, and sustainability through functional and environmental factors.

It is necessary to ensure user satisfaction by meeting new needs due to changes in social, cultural, and economic factors, changes in the number of users, changes in the age of users, etc., so that the residence can be used for a long time. Technology-related factors are the need to use new products and adapt to the technology with the development of the technology. Economic reasons are the need to achieve economic benefits by limiting the aging of the housing stock with systems that allow flexible use in design and avoid unnecessary production with long-term use. Flexible buildings are a natural part of a sustainable system in terms of long-term use and the ability to change according to needs. Flexible residences are associated with social and economic sustainability. The social aspect includes user participation, demographic change, and community stability. Functional factors are the problems that arise due to the function no longer being valid and the need to meet new needs. Environmental factors are the needs arising from environmental changes caused by climate and nature.

These ever-changing reasons necessitate architectural solutions that include flexible planning, that is, the capacity to change and evolve with people, the environment, technology, and function. Therefore, flexibility is a contemporary quality criterion in design, architecture, and urban design, from theory to practice, planning, and living.

### ***3.1. Historical Development of Flexibility in Housing Design***

Flexibility, a critical design criterion in contemporary building design, emerged with the human need for shelter (Gök, 1993; Schneider and Till, 2007). Research on flexibility in the historical process suggests that human beings have considered spatial constructions and implemented them since they built the earliest settlements.

The concept of flexibility in housing can be discussed under two main headings: the influence of local conditions and the political, economic, sociocultural, and technological developments due to the housing shortage that emerged after the First World War (Schneider and Till, 2007). designers do not affect local conditions as they are shaped entirely by usage habits and cultural structure. However, the responsibility is left to the designers in the second one.

In the process that begins with sheltering, we observe the existence of flexible structures that people consciously or unconsciously constructed in their living areas according to their needs and for climatic, social, and cultural reasons. Examples are the attempts to shape the holes and cavities on the interior surfaces of caves according to one's own needs, underground extensions or extensions above ground, additions to inadequate dwellings, and the multipurpose use of a single volume as a living/sleeping space.

People adopt the spaces in which they live, adapt to them, and interpret the objects in them according to their needs. Adapting to changes due to the growth of families, young children, the death of the elderly, and the changing size of families requires flexibility. In terms of flexibility, it is important that the functionalist approach inherent in the traditional creates alternatives for users and introduces different variables for spaces. In this context, the first examples of flexibility can be observed in traditional houses. It is possible to see flexibility in the traditional housing of many countries (Japan, the Netherlands, Germany, the United Kingdom, and Turkey).

There is no conscious construct of flexibility in primitive settlements and vernacular architecture. An approach to flexibility emerges from use, experiences, and needs. Flexibility was consciously introduced into design in the twentieth

century. In this period, architects considered flexibility a critical design criterion. People needed more accessible and flexible solutions and began rejecting spaces designed for everyone. They began to demand spaces that could adapt to changes in their family and work lives over time. During this period, architects worked toward flexibility and easy adaptability regarding structure and building materials.

Three periods have influenced the prominence of flexibility in housing design and its proliferation as a solution for designers (Schneider and Till, 2007; Hasgül, 2018). The first was the need for social housing programs in the 1920s to provide mass housing. The deterioration of spatial standards and the development of new construction methods led architects to flexible designs to ensure that new standards did not constrain users.

The second driving force is the idea that prefabrication systems and emerging technologies, which began in the 1930s and 1940s and continue to this day, can provide solutions for mass housing. With the development of industrialization and technology, there has been a tendency towards flexible spatial solutions, using systems and materials that tend to repeat the same module in the design but allow for moving and transforming spatial constructions.

Third, flexibility became a way of offering users choice in housing due to the participation and user involvement movements of the 1960s and 1970s. During these years, flexible spaces that put users at the center and allowed them to participate in the design process came to the fore due to democratization at the social level.

Under the influence of these driving forces, flexibility proliferated as a quick fix in residential design and became a design necessity as user needs diversified in the twentieth century.

The search for free and minimal space is the basic principle of modernization. Free and fluid plan constructions coincide with flexible design. The period after the First World War marked a new turning point in architectural circles, paving the way for numerous innovative movements in architecture and design in Europe (Acharya, 2013). Cheap houses with poor space standards were built to meet the housing shortage during these years. This problem became an issue addressed by designers in many European countries. In 1929, the second CIAM congress was held in Frankfurt. Participants focused on housing design and argued that low-cost, high-density apartment blocks in the smallest space were the ideal housing unit of the time (Mumford, 2002). They concluded that when space is limited, it should be efficient and as flexible as possible. Thus, flexibility, developed in response to an urgent need, became a strength of modernity and led



architects to flexible plan types. During these years, the demand for spaces that could adapt to changes increased. Studies were carried out to ensure flexibility and easy adaptability regarding the structure and building materials.

Industrialization brought technological developments. The fact that ready-made production materials offer different spatial possibilities (addition, subtraction, enlargement, reduction) is associated with flexibility. Architects used technological developments to design mass-produced prefabricated houses to meet the housing shortage after the First World War. Le Corbusier, one of the proponents of mass production, developed projects with the potential for production by the assembly. Le Corbusier noted that mass production was cost-effective and could be rearranged at any time with lightweight walls and partitioning systems and offered plan alternatives (Schneider and Till, 2007). The mobility and interchangeability of building elements through modular systems and mass production, as well as the hierarchical ordering of building components, have been a driving force in designs that offer flexibility to the user. Thus, flexible designs have emerged that can create different alternatives in the spatial organization both in the design processes and use phases.

The 1960s and 1970s were the years when design approaches that involved users in the planning process became important in housing design due to emancipation and democratization movements in the social background. During these years, flexibility became a theme pursued by architects and sociologists, who advocated that each user should have a say in the location, orientation, and design of their dwelling and should have the opportunity to personalize it.

With the tendency for users to participate in design processes and have a say in design according to their personal needs and desires, these are the years when the concept of flexibility is not only an issue that can be achieved through technical solutions but a real flexibility that can be realized through user participation and choice.

Modernism, industrialization, and user participation in design processes led to new production models and new theoretical and practical extensions by architects.

#### **4. EXAMPLES AND APPROACHES TO FLEXIBILITY**

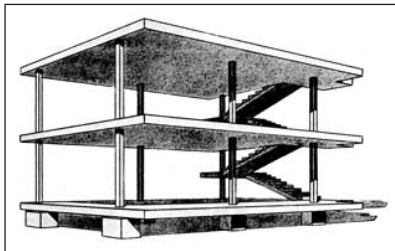
Although flexibility was used as an essential input in design in the 1950s, the free plan schemes, plain, simple, and functionalist proposals defined by modernism in the 1920s are associated with the flexibility (Forty, 2000). With the

importance given to housing design in the twentieth century, flexibility has moved from being a theme realized in design by users according to their daily needs to becoming a theme architects focus on and work with. Since the 1920s, figures such as Le Corbusier, Gerrit Rietveld, Mies Van der Rohe, Bruno Taut-Martin Wagner, Carl Fieger, Yona Friedman, John Habraken, Herman Hertzberger, and Avi Friedman have designed residences that follow the principle of flexible design. In addition, figures such as Habraken, Duffy and Brand, Schneider, and Till have made substantial efforts to provide flexibility in housing.

#### *4.1. Flexible Residences*

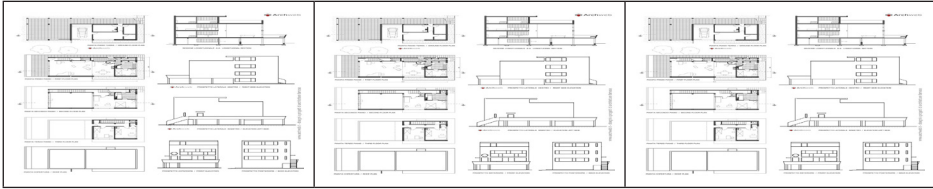
The earliest works on flexible design belong to Le Corbusier. Corbusier's twentieth-century plan libre and façade libre are directly related to the flexible design principle. Freedom here means the separation and liberation of previously interdependent elements. It aims to save the plan from the facade, the construction from the facade, the facade from the plan and the construction, the construction from the spatial fiction, and the window from the walls. In Le Corbusier's projects, it is possible to speak of a stable supporting structure and a short-lasting complementary structure (Yürekli, 1983). The reinforced concrete skeleton is a tool for Le Corbusier. He aims to achieve a non-dictated spatial construction and to create flexible spaces that can be adapted, modified, transformed, and expanded according to the person who creates them.

Maison Domino is a reinforced concrete frame system designed in 1914 as a prototype building for mass production based on the principles of modularity and free plan/free facade. This prototype is considered a pioneering use of the open partition system in housing. The structural system is organized in such a way as to ensure the changeability and flexibility of other building elements. All elements are independent of each other, including a free plan and a free façade system. The plan organization is entirely independent of the structural system, which offers alternatives in the interior space.



**Figure 1.** Maison Domino (1914), Le Corbusier (Url 1)

Le Corbusier designed the Maison Citrohan between 1919 and 1922. The structural system does not consist of a reinforced concrete frame but of parallel shear walls that form the boundaries that support the entire building. The ground floor is a monolithic space, undivided until the service volumes are at the rear. The upper floor, where the bedrooms are located, is a gallery up to half the floor. Therefore, the ground floor is a fluid living space, undivided horizontally and vertically, and conventions do not determine its boundary with the upper floor.



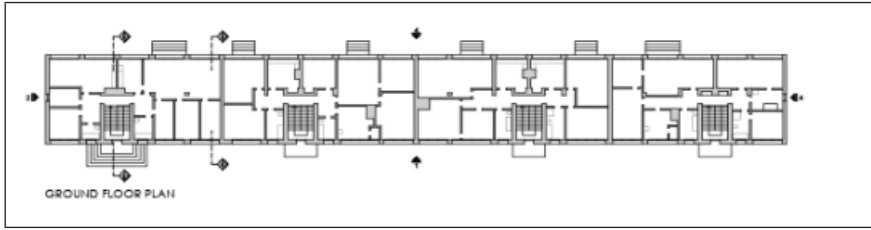
**Figure 2.** Maison Citrohan (1919-1922), Le Corbusier (Url 2)

The Schröder House, designed by Gerrit Rietveld in Utrecht in 1924, is a prominent flexible residence. It consists of two floors organized around a central core with an open floor plan. The ground floor consists of a kitchen, living room, study, and bedroom, while on the first floor, there is an arrangement of folding movable partitions that allow for a single open and fluid space.



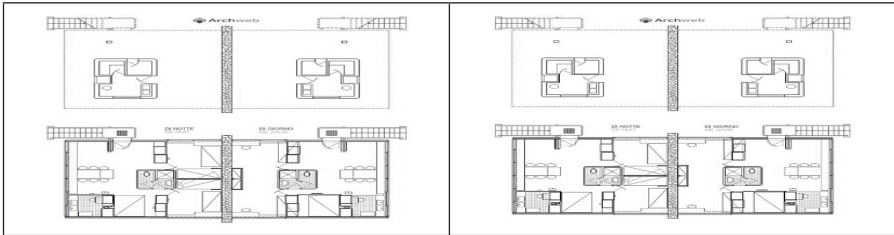
**Figure 3.** Schröder House (1929), Gerrit Rietveld (Url 3)

Mies van der Rohe states that flexibility is one of the most important concepts in architecture and that flexible construction is the most appropriate method to use the building most efficiently with the changing needs of the users. Using interchangeable elements, Rohe established a relationship between flexibility and prefabrication in his buildings. This approach is the first step in today's prefabrication systems. The floor plans in the Weissenhofsiedlung apartment buildings are open with one or two columns. The bathroom and kitchen are adjacent to the stairwell. The residential units are added one after the other. The modulation system is a flexible skeleton system allowing different spatial configurations. After the Second World War, the residences served as the city's children's hospital (Schneider and Till, 2007). The residences can be adapted to different lifestyles and used for different functions.



**Figure 4.** Weißenhofsiedlung (1927), Mies van der Rohe (Url 4)

Maison Loucheur has a floor plan divided in two by a thick stone wall. With prefabricated systems and movable and foldable furniture, the 46 m<sup>2</sup> space offers the equivalent of 71 m<sup>2</sup> with flexible use (Schneider & Till, 2007). It consists of a large room for resting and performing activities of daily living, a kitchen closed by a sliding screen, beds that include a wardrobe, and an independent bathroom space, all organized around the space.



**Figure 5.** Maison Loucheur (1928/1929), Le Corbusier (Url 5)

In the Hufeisensiedlung housing project, Taut and Wagner, two of the leading architects of modernism, planned an architectural layout consisting of rooms of similar size. Designed to allow for a variety of uses, the rooms were left neutral without function to accommodate users with different lifestyles. To achieve this, the structural system is planned with a load-bearing wall. The units with undefined functions can respond to the user's different needs with their dimensions and relationship to each other.



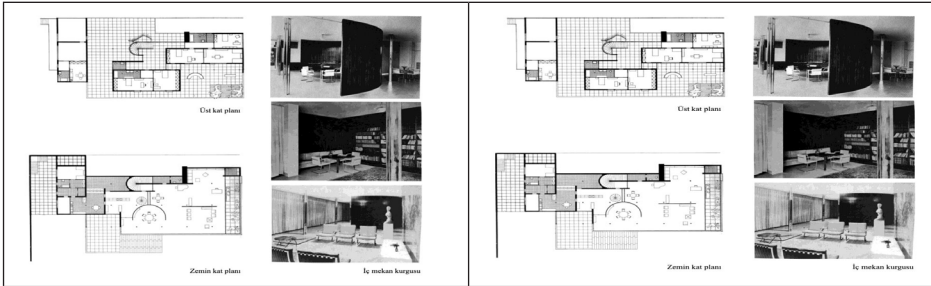
**Figure 6.** The Hufeisensiedlung (1925-1931), Bruno Taut and Martin Wagner (Schneider and Till, 2007)

Carl Fieger's Kleinwohnung in Berlin is a residence where different functions are realized according to day and night use. With sliding doors and movable furniture, it offers a wide range of uses. A small apartment of 40 m<sup>2</sup> has the potential to accommodate all the functions that can be performed during the day.



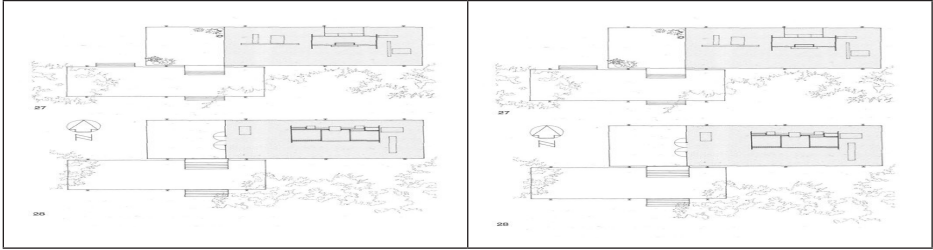
**Figure 7.** Kleinwohnung (1931), Carl Fieger (Schneider and Till,2007)

The Tugendhat House has an open and independent system not constrained by fixed patterns. The walls are intermediate partitions between which it is possible to organize the spaces. The load-bearing steel columns eliminate the load-bearing characteristic of the walls inside the building. The open plan system allows the user to organize the space according to his needs. Technical areas are grouped in one place, while other functions are left to the user's preference.



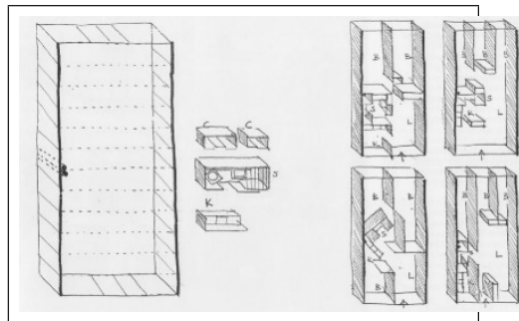
**Figure 8.** Tugendhat House (1928-1930), Mies van der Rohe (Url 6)

The Farnsworth House consists of three horizontal slabs and 12 load-bearing columns, and shear walls embedded in the ground. Furniture and bathroom walls transformed into kitchen furniture are the secondary elements that make up the building. Technical areas are clustered in one location, while other functions are left to the user's preference.



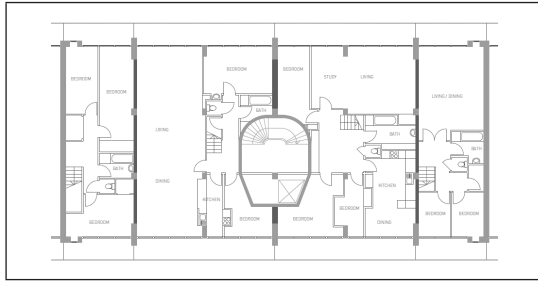
**Figure 9.** Farnsworth House (1945-1950), Mies van der Rohe (Url 7 )

After the war, Friedman designed Movable Boxes in 1949 as temporary housing for low-income groups. The Movable Boxes project creates spaces for different user profiles, spatial diversity, and changeable spatial organization through undefined spaces. The separate spaces are independent and interoperable. Their sizes are equivalent so that spaces can be used at will, and separating spaces provides users with intermediate elements such as furniture, screens, etc. The fixed elements of the plan are the bathroom and the kitchen unit. All the partitions are made with a modular system of panels.



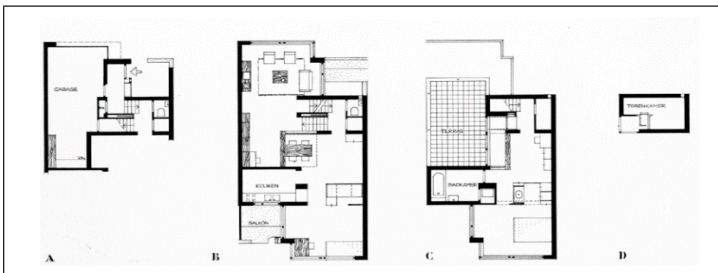
**Figure 10.** Movable Boxes (1949), Yona Friedman (Url 8)

The Kristalbouw project is designed in the Habraken approach of support and infill units. The project is a concrete frame building system. Depending on the user's preference, the balcony can be used as a corridor or a gallery. The fixed elements in the design are the staircase and the elevator in the center. Other units are left free. Within this structure, Trapman offers a fiction that meets different alternatives, such as partition systems, circulation areas, and single-use apartments.



**Figure 11.** Kristalbouw (1952), Jan Trapman Schneider and Till (2007)

In Diagoon Houses, Hertzberger proposes a preliminary plan that can be adapted to the family structure. The residence consists of living units around two fixed cores. The user can use other units according to his or her needs, such as living, sleeping, playing, resting, etc. There is no clear boundary between the areas. Each section can be partitioned within itself. Non-functional balconies can be used with the living space according to the user's preference. The basic idea of Diagoon houses is to design a space articulated in vertical and horizontal planes according to the user's preferences.



**Figure 12.** Diagoon Houses (1971), Herman Hertzberger

#### ***4.2. Approaches to Flexibility***

There are several approaches to flexibility. Habraken's "open building system" approach, Dufft and Brand's "layering" approach, and Schneider and Till's "soft and hard" analogy are the most prominent approaches to flexibility that are frequently mentioned in the literature.

Habraken, appointed director of the Stichting Architecten Research (SAR) in 1965, proposed the 'Open Building' approach as a solution to socially, economically, and technically inadequate housing. This approach proposes separating support and infill units during the design and construction phases to ensure flexibility in housing design. Support units are the permanent and long-



lived parts of the building that provide the basic infrastructure, while infill units are the shorter-lived, user-specified, and adaptable parts. “Support” refers to those parts that are common to all users and independent of other units, such as the building’s structural, façade, circulation, mechanical, and equipment systems, while “infill” includes finishes such as doors, walls, floors, and ceilings that can be modified for individual uses without changing the building structure.

By separating the building into a short-lived infill level and a long-lived support level, designers can predict the service life of materials and systems and create an awareness of their relationship to other components (Schmidt et al., 2010). This construction system offers both interchangeable technical solutions and a flexible system that allows users to participate in the design and construction process, which they can personalize. According to Habraken’s approach, the architect’s role is not to design the space but to design a structural system in which the space can be placed.

The layering approach, a method used to accommodate possible changes in the construction process, is a variation of the layering idea in the support infill approach proposed by Habraken. The main principle of this approach is to separate and implement a hierarchical system of components with different lifetimes and characteristics in the building, thus increasing the capacity for change during the process. The more independent the layers are, the more easily they can be replaced, removed, or repaired without damage.

Frank Duffy (1992) considers the structure in four layers and envisages their separation; shell, services, scenery, and set. Later, Stewart Brand (1994) added two more layers and named it 6S’s; site, structure, skin, service, space plan, and stuff (Furnishings and equipment). (Estaji, 2017; Schneider and Till, 2007).

Schneider and Till propose an approach to designing flexible housing that they call “soft and hard. Soft use allows the user to make necessary changes while the designer works in the background. Soft use usually requires much space and has both planning and technological requirements. Hard use is an approach in which the designer determines the user’s needs for possible changes and adaptations during the process, and the designer is in the foreground.

As Adrian Forty puts it, hard use is an illusion that allows architects to control the future (Schneider and Till, 2007). Hard use is an approach to flexibility that allows the user to operate architectural equipment with sliding doors, movable walls, and folding furniture. Soft use puts users in control and allows them to organize the space according to their own desires. Schneider and

Till suggest that flexibility in housing involves planning at the building, unit, and room levels and design and technical solutions at the structural level.

Residences in the 1920s have a simple, functional interior design and a fluid living space. Open and fluid plan constructions are seen thanks to the core in the center or on one side of the plan. This approach also allows the houses to be added side by side. A flexible approach offers alternatives in the interior space independent of the structural system. With the development of prefabrication systems, plans that can change according to the users were made thanks to foldable and movable dividers in the interior space. In the following years, it is possible to see examples where housing units are articulated by coming side by side with the modulation system. After the fifties, the rooms planned with the same or similar size were left neutral, while sliding doors and movable furniture were used to provide flexibility where the user could determine the function. After these years, different design approaches have been developed to provide flexibility. These approaches are mainly related to decisions regarding the flexibility of the structural system in the interior space. In general, proposals are presented that consider separating building components from each other.

## 5. CONCLUSION AND RECOMMENDATIONS

It is important to incorporate flexibility into the design of housing that meets basic needs as a place of shelter to respond to the personal changes that will be necessary throughout the users' lives. Flexibility is not only a physical solution that allows for changeability and adaptability in design but also a force that has a strong relationship with time that carries broad meanings to provide social, cultural, and economic benefits in terms of long-term sustainability, freedom, user participation, and personalization.

Flexibility in housing design has evolved through history with different approaches. Before 1920, traditional houses had spatial constructions designed according to the users' needs. Intentionally incorporated into planning in the 1920s under the influence of modernization, flexibility has become widespread in many countries since the 1950s with the development of new design, production, and methods through modernization, democratization, and user participation. The explanations that many architects have brought to the subject in theory and practice have allowed the concept to be studied and developed in different ways until today.

The study focused on past examples' theoretical and design aspects with a flexible design approach. Studies and examples show that flexibility is approached from various perspectives with different levels and forms.

Flexibility can be achieved through the design, construction, and use of systems. Each level contains principles for design flexibility. At the structural level, flexibility can be achieved through systems that separate building components. One of the basic principles of flexibility is that the structural and nonstructural elements are independent of each other, and each can be modified. It is important that the structural system, facade, interior walls, and all other sub-elements are independent and can be changed. At the spatial level, it is necessary to ensure interchangeability with the alternatives the use and planning offer. Creating neutral spaces, leaving redundant spaces, creating spatial constructions that can be combined/divided, added/subtracted, using movable elements, and creating modular systems offer flexibility at this level. Neutral spaces are areas where the function is not determined in the design and where the user can assign a function according to his needs. The creation of redundant spaces in the design are areas where the final decision and form, which the designer does not complete, can be advanced by involving the user in the process. Combinable/divisible and addable/subtractable spatial constructions are the flexibility approach provided by combining independent and isolated units with other units or dividing them within themselves. Horizontal and vertical combinability/divisibility can be achieved.

Similarly, the addition/subtraction feature is the ability to add or subtract horizontally and vertically as needed. The use of movable elements allows different uses in the home with its mobility feature. Movable and sliding walls and partitioning systems make it possible to create different spatial constructions according to the needs and desires of the users. The use of modular systems is an approach offered by the modular design of materials, components, structures, and equipment. Interchangeable parts, thanks to their modularity, can offer alternatives to the user.

In this context, flexibility is a set of systems that offer different spatial constructions at the level of structure and space, allowing users to use the space in different ways for different purposes. It is possible to apply all these strategies in different forms, one or more of them simultaneously during the design and use phase. In this way, it will be possible to design flexible structures, spaces, and systems that can change according to economic, social, and environmental factors that give designers and users the right to choose.

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## CHAPTER XVIII

# A NEW SYMBIOTIC LIFE APPROACH FOR INDOORS: PET-FRIENDLY INTERIOR DESIGN

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### 1. INTRODUCTION

This study proposes a new approach to human-animal interaction indoors. The subject of the study has been determined as the existing animal-friendly interior design approaches, animal-friendly design policies, and animal-friendly spaces within the scope of the possibilities of the symbiotic life of the human-animal duo in the interior.

It is known that pet ownership is becoming more and more common in cities. Accordingly, the increasing pet population has led to the emergence of various needs. Causing this increase; is the decrease in social close relations, the disintegration in the family institution, the need for freedom, and the production-consumption cycle imposed by capitalism, because of people's isolation and turning to animals to meet their 'close relationship' needs, and the gradual decrease in the relationship with the natural environment can be shown.

Especially in the quarantine processes experienced with the Covid-19 epidemic, which affected the whole world at the end of 2019, people's longing for nature has increased even more, and interior spaces have undergone transformations that meet this need as a solution. The development of new forms



of living together because of living with animals and the increasing presence of animals in the interior space has been reflected in our lives as important results of the epidemic period. Man's relationship with his environment is as old as human history. Man's strengthening against nature and changing the natural environment also destroyed natural life. For this reason, an ecological approach has been developed to understand the balance between humans and nature. In addition to humans and the natural environment, the relationship between animals and humans, which are a part of the natural environment, has also begun to be questioned.

Although the human-animal relationship began to be questioned with this approach, it has been observed that few studies have been conducted on the physical architectural space characteristics of a symbiotic life created with an egalitarian understanding. At the same time, it has been observed that approaches that support the continuation of the common life, which is the natural result of a symbiotic life created with an egalitarian understanding of interior design, are encountered in a very limited number of projects.

It is possible to evaluate the concept of animal-friendly space within the ecological approach based on the aim of increasing human interaction with the natural environment. However, in this assessment, humans and animals are not considered as two equal species. In the ecological approach developed with the idea of sharing human habitats with animals, the human being is superior to the problem of deterioration of the habitats of animals because of the destruction of natural life by humans.

It can be said that in places where the natural environment is irreversibly deteriorated, and human habitats are not available, different alternatives to the ecological approach have emerged. As in the ecological approach, it can be mentioned that alternative approaches based on increasing human and natural environment interaction are created to produce valid solutions to current problems. For this reason, besides the ecological approach, many different approaches question the relationship of human beings with the natural environment. Approaches such as Biomimicry and Biomimesis can be given as examples, and it is also possible to evaluate the subject within the scope of sustainability, which offers a broader perspective. In this context, it is thought that the conceptual framework on which the approaches to human-animal interaction are based also determines our perspective on the symbiotic life that centers the human-animal relationship in the interior. For this reason, it is necessary to evaluate the subject ontologically to understand animal-friendly space approach.

In the ontological approach, which is accepted as a clear and formal representation of a common conceptualization, the basic principle is to examine the artificial physical environment, architectural structures, construction/design processes, and interior design principles through concretely observable data. Accordingly, beyond sharing the spaces designed for humans with animals, the main argument of this study is the ontological evaluation of pet-friendly interior design practices that promise an egalitarian living space for both species.

The problems experienced in human-animal interaction regarding symbiotic life in the natural environment are quite limited. It can be said that such problems that arise within the natural order are resolved over time. However, it is observed that the problems that arise regarding symbiotic life in places where the natural order cannot be preserved are resolved in favor of the dominant/determining party. Considering that human is the dominant/determining party in the built environment in human-animal interaction, it is a fact that primary human needs are taken as basis in the designed spaces. In this case, it is thought that pets can live in spaces designed for humans. This thought, which can be accepted in case of necessity, contradicts the symbiotic philosophy of life.

‘Symbiosis’, a concept of biological origin, refers to the state of organisms that live physically connected. The key to the symbiotic relationship is that each organism evolves due to the interconnected existence of the other (Zaccaro & Horn, 2003). In this case, the development that is thought to be mutual is beneficial for both parties. According to this view, while people protect and develop pets in places where they live together, pets contribute to people’s lives in various ways. Since life continues in structures designed for humans in this mutually maintained relationship, designing for animals has been neglected. This negative situation may be caused by the human-centered design approach, which sees humans as superior beings. With the view of man as superior, all other beings were accepted as negligible. Based on this assumption, the main argument of the research is that the current interiors should be redesigned according to the needs of humans and pets living together since they are not suitable for symbiotic life. This requirement is based on the need for an interior design where creatures with different needs and sizes can live together, beyond the adaptation of pets to the places where humans live.

It can be predicted that design problems will gradually increase in places where symbiotic life is maintained, depending on the increase in the pet population in the artificial physical environment. In this context, it has been determined as the hypothesis of the research that new and equitable design

strategies to be produced to solve the problems that arise within the symbiotic life can also be a solution to the problems that may occur when designing human-animal interaction. Within this hypothesis, the research aims to propose an inclusive, equitable, innovative, and sustainable design approach by reviewing the conceptual frameworks of design strategies that question the possibilities of the symbiotic life of the human-animal duo, beyond examining designs that deal with human-animal interaction.

Since the topic chosen in the research has not yet been defined as a design problem by researchers and theorists, the subject has not been given enough space in the literature. For this reason, the research primarily draws attention to pet-friendly interior applications that allow a symbiotic life in architectural interiors, especially in design strategies. Ontological research carried out to systematically examine the studies on the subject and determine the trends in the design field is also important in terms of being explanatory.

The fact that the research draws attention to a new approach to solving current design problems reveals the original value of the research. To systematically evaluate all the existing data that make up the literature to determine the approaches to human-animal interaction in the field of design, the subject has been examined in terms of the symbiotic life between humans and pets in the physical interior. Plants and other living things are excluded. Accordingly, the scope of the research has been limited to indoor spaces designed for human and pet life indoors.

As a research method in the study, the survey model, one of the quantitative research methods, was preferred to review the existing situations of pet-friendly interior design approaches. To determine the trends in the research population of the explanatory study, the general screening model was preferred to reach a generalizable judgment in the systematic review. The monographic sampling method was used in the creation of the sample in the research carried out within the ontological approach, which is accepted as a clear and formal representation of a common conceptualization.

In addition to general data on pet ownership figures, pet-friendly policies and practices were also examined in the research. In this respect, a two-stage methodology was preferred in the study. In the first stage, the keywords 'interior, space design, symbiotic life, pets, and artificial environment' were used to determine the situation in the thesis database of the Higher Education Institution (YÖK), Dergipark academic database, architecture web database, Google academic database. The research was conducted in the database of Turkey and the library catalogs of universities with architecture/planning and design departments.

After the approaches in Turkey were determined, the English equivalents of the mentioned concepts were searched in databases such as Bielefeld Academic Search Engine (BASE), Elsevier, and Web of Science to examine the studies carried out in the world in the second stage of the research. From the findings obtained as a result of the research, those deemed appropriate in terms of subject, content, and basic field/scientific field were classified by the researchers.

Samples suitable for the symbiotic life design criteria were selected as samples for the research. Visual and written data constituting the sample set were analyzed using content analysis and discourse analysis. In line with the findings obtained as a result of the research, the ontological evaluation of the compiled approaches was carried out by making a thematic compilation, since an examination was made on a specific subject.

## 2. KEY DEFINITIONS AND CONCEPTS

In the 21st century, it has been understood that arrangements should be made for a symbiotic life in interior design, depending on the population growth of pets, which are seen as a member of the family, especially in urban dwellings. To make these regulations, activities are carried out in various disciplines. As a result of these activities, it has been noticed that animal-friendly design policies have become increasingly widespread and important at all scales. However, it has been seen that symbiotic life is regulated within the rules of law, and it has been understood that the reflections of the arrangements created on the space design have reached a very advanced level. Although there are a lot of practical space applications, it can be said that the subject is not evaluated adequately in the ontological sense. For this reason, pet-friendly space design approaches should be examined by discussing the subject within a conceptual framework. As a result of this review, the differences between ecologically based approaches will be understood. By understanding that not all the applications are ecological, architectural physical space and indoor physical comfort conditions will be improved for both species.

The set of rules about human-animal coexistence should be dealt with primarily through the concept of ethics, apart from the laws. The concept of ethics, which develops the practice of being a person who exhibits the right behaviors and thinking about human values, is derived from the Greek word ‘ethos’ which means ‘personality and character’. The word ‘ethics’ is defined as “moral principles that control or influence a person’s behavior” in Oxford Dictionaries. Ethics is a field that philosophically examines the individual’s

relations with his environment and behavior patterns, and in this respect, it is different from morality.

Ethics are the basic principles and elements that draw attention to the importance of displaying morally correct behavior by defining the right and wrong behaviors of people. The ethical approach is the principles that determine whether attitudes and behaviors are right or wrong.

Therefore, it can be said that ethical rules constitute the whole of behaviors adopted by society in a way that can be briefly defined as a norm. However, not all norms are ethical rules (Changeus, 1993).

Ethics, which has been considered a concept limited to people and society for many years, is being evaluated more broadly in the 21st century. Accordingly, a new understanding of ethics, which includes non-human living beings and even all elements of nature, is becoming more and more widespread. The ethical approach, which was limited to Utilitarian Ethics, which originated from the ideas of Bentham and John Stuart Mill, has now become a field with a much wider framework (Ertan, 2004) Roderick Frazier Nash named “The Rights of Nature: A History of Environmental Ethics”. In his book, he says that this change in ethics consists of four stages. These; are defined as Pre-Ethical Past, Ethical Past, Present Ethics, and Future Ethics.

Nash states that in the first stage, which is described as the ‘Pre-Ethical Past’, ethics focuses only on the human self and interests. In the second stage, ‘Ethical Past’, it is seen that only family, tribe, and region are of interest to ethics. Following this, in the third stage defined as ‘Present Ethics’, the concepts of nation and race were also included in the field of ethics. However, the presence of animals at this stage is still limited. In the last stage, ‘Future Ethics’, it is stated that there is a new definition of ethics with a broader perspective focusing on the concepts of universe, planet, ecosystems, rocks, life, plants, and animals, together with humans. Thus, the concept of ethics has gained a comprehensive focus that includes all living and non-living beings, systems, and the indispensable relationship between them, from the first stage, which is directed only toward the human self and interests.

This evolutionary change in ethics can be attributed to the harming of natural resources by focusing on consumption in human relations with the environment. In the period before the industrial revolution, human being, who lived a life intertwined with nature, was able to create artificial environments to the extent allowed by nature. However, after the Enlightenment, the development of positive sciences and giving people the power to resist nature

caused the relationship between humans and nature to deteriorate. As a result of the increasing environmental degradation after the industrial revolution, people started to question right and wrong behaviors within the concept of ethics.

As the influence of man on the ecosystem has increased, the balance of power between nature and man has changed, and man has thought that he can dominate nature and all other living things.

The approach based on this idea became widespread in the 19th century when the industrial revolution took place and was defined as the Anthropocene approach. The term Anthropocene is a combination of the Ancient Greek words ‘Anthropos’ meaning human and ‘kainos’ meaning new. After the definition made by the Dutch chemist Paul Crutzen and the North American biologist Eugene Stoermer, the concept has been used in all areas where the central role of man is desired to be emphasized. The concept of the Anthropocene, emphasizing that human influence has become a significant force, has not been limited to natural sciences. The concept has also caused a dynamic interaction by including social and human sciences.

Stainer, in his book named ‘Anthropocentrism and Its Discontents’, in which he defines the anthropocentric approach in the field of philosophy, states that man positions everything that exists in nature according to himself (Aşar, 2017). The Roman philosopher Cicero said, “We use our hands to create a second nature for ourselves within the domain of Nature.” Adopting the ideas of Cicero, Bookchin found this approach incomplete and developed the concepts of first nature (primitive, untouched nature area) and second nature (consisting of thought, language, and complex structures where only hands are not used) (Bookchin, 1999). According to Bookchin, in the Early Neolithic Period, there was no hierarchy and no human domination of nature. Hierarchy, which has an important place in the emergence of second nature, has begun to show itself as a part of social life. This process reached its peak when humans dominate nature (Reyhan, 2014). Even though interior spaces designed according to this expression are second nature, since they are considered human-centered, living things other than humans do not matter as a design criterion in these spaces.

The environmental crisis in the 1960s led to the destruction of the myth of humanity’s domination of nature, which developed as a result of man’s positioning everything in nature according to himself. In this case, human has developed approaches such as the ecological approach to re-establish the balance in human-nature relations, the deterioration of which he caused himself. However, considering that man is still an evolving creature, it can be said that

the developed thought has changed over time according to the needs. Giddens explains this situation with the concept of risk. According to Giddens, there are two types of risk: exogenous/natural and manufactured risk. Natural risks have been replaced by manufactured risks. He says people can eliminate this situation by determining their future through change (Giddens, 1998).

In the 1970s, the study of related environmental variables to understand human behavior and social organization also led to the formation of a new paradigm.

Accordingly, the new ecological paradigm argues that instead of placing humans in the center, humans are also a part of the ecosystem like other living things. In this case, it can be said that a new understanding centered on nature has developed. Accordingly, the human-centered approach of modernist thought has been replaced by a nature-centered approach in the postmodernist era.

The postmodernism approach, which became widespread in the middle of the 20th century, started to be discussed in the book 'The Postmodern Condition' by Jean François Lyotard in 1979. In Lyotard's book, while he sees modernity as a problem at the theoretical level, he describes postmodernism as a new intellectual period that creates a different perspective rather than a historical period that defines a certain period. In the thought of postmodernism, it is argued that an exploitative system of order and thought has been created as a result of the deterioration of the concept of modernization and industrialization, and the normal relationship between man and his natural environment. This idea supports a symbiotic life as it accepts the rights of life as equal. However, it does not define bio-physical conditions of this life. In this new ecological approach, although Anthropocene understanding is completely abandoned, it is accepted that humans are dependent on other species in the global ecosystem (Dunlap & Catton, 1979).

The understanding that has transformed from an ecological approach to an eco-system has also caused the scope of the human-nature relationship to expand in the 21st century. Accordingly, the human-nature relationship went beyond human-animal interaction. The ecosystem, which is defined as a whole consisting of living things living together in a certain environment and constantly interacting with each other, and their inanimate environment, was formed as a result of the evolution of ecological understanding that developed in parallel with Giddens's thought. Considering that the largest ecosystem in terms of volume is the 'ecosphere', it cannot be expected that domestic animals that we live together in the second nature created by human beings can live in indoor spaces designed according to human scale. The arrangement of our interior



spaces, where we live a common life, by human-animal scale and comfort, should be considered as an approach that supports the 'ecosphere approach' and provides welfare for both parties.

Innovative interior designs that will encompass all living things with a holistic understanding need to be reshaped according to the changing needs of the 21st century. The holistic understanding, developed within the framework of the idea that nature should be considered as a whole, can be considered as the opposite idea of the reductionist approach that puts people in the foreground.

In summary, it can be said that evaluating life itself as a whole, considering the integrity of the ecosystem, is an important system of thought for the future of the universe and the continuation of quality life.

### **3. MATERIALS AND METHOD**

The ontological approach used in the study has been evaluated in a way that will enable a new theoretical perspective to emerge from the combination of existing approaches. An integrative review approach was used to evaluate, criticize, and synthesize the literature on the subject.

A two-stage methodology was preferred in the study. In the first stage, research was conducted using the keywords 'interior, space design, symbiotic life, pet, and artificial environment' to determine the situation. To examine the studies done in the world, the English equivalents of the concepts were searched in databases such as Bielefeld Academic Search Engine (BASE), Elsevier, and Web of Science.

A literature search was conducted within anthropocentric and ecocentric approaches. Among all the studies found in database searches, the sample selected for analysis focused on the evolution of the ecological approach over time. Depending on the purpose of the research, it was desired to review, critically evaluate and potentially reconceptualize historical information on the subject. The literature review on topics related to eco-system-centered approaches, which is an emerging topic, focused on the relevant themes emerging from the content analysis.

Samples found to be suitable for the design criteria for symbiotic life were selected as samples for the research. Visual and written data constituting the sample set were analyzed using content analysis and discourse analysis. The monographic sampling method was used in the creation of the sample in the research carried out within the ontological approach, which is accepted as a clear and formal representation of a common conceptualization.

As a research method in the study, the survey model, one of the quantitative research methods, was preferred to review the existing situations of pet-friendly interior design approaches. To determine the trends in the research population of the explanatory study, the general screening model was preferred to reach a generalizable judgment in the systematic review.

In obtaining the material used in the study, the literature on ecocentric or animal-oriented ethics was synthesized and classified. However, new approaches have allowed us to consider different perspectives and understandings together.

It has been observed that some terms, such as ‘non-humans’, which emphasize the inclusiveness of the eco-system other than animals, sometimes overlap with other terms such as ‘animals’. Expressing animals with different terms such as non-human or non-human creatures shows that the terminology on the subject is not yet clear enough.

In the research, it was understood that terms such as animal ethics (or rights/freedom/welfare), human-centered, bio-centered, biodiversity, ecocentric, non-human, and animal-centered are frequently used. These terms were then organized into themes and studied in line with the relevant theories.

#### **4. FINDINGS AND DISCUSSION**

The 19th century, which is defined as a human-centered mentality, is defined as a period that is structured only in line with the person himself and his interests. The basic logic of the anthropocentric approach is the view that the entire universe and all kinds of living or non-living beings in it exist for the benefit of man.

The view that animals were created to benefit humans is common in this process. The relationship with animals is based on a utilitarian understanding, and the value of non-human beings has been measured by the benefits they provide to humans.

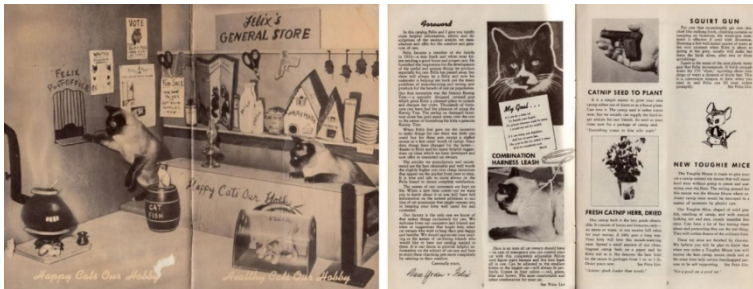
Before 1960, while the common life of humans and animals developed at a limited level, the conditions related to the common life were shaped by an approach where the comfort of people and the benefit provided were at the forefront. For example, while cats live in their homes with humans, the main purpose is to keep rodents away from the home environment (Figure 1). Similarly, dogs started to live with humans, but with a utilitarian mentality to provide protection, they continued their existence outside the houses in their kennels.



**Figure 1:** Cats in daily life, living indoors (1950-51)

**Source:** Photo by George Pickow/Three Lions. <https://www.vintag.es/2020/03/feline-50s.html>

However, in the 1950s, which is referred to as an anthropocentric period, it is possible to come across approaches to human-animal symbiosis, developing on a limited scale, considering the comfort and welfare of animals. In 1956, Daniel D. Yoder, owner of The Katnip Tree Company of Seattle, Washington, USA, published a “Felix General Store” catalog of all-cat products for indoor use. The catalog published by the company, which carries out wholesale and mail-order commercial activities, included long texts reminiscent of pet care after the 2000s and a series of products designed for cats (Figure 2).



**Figure 2:** Felix General Store catalog pages (1956).

**Source:** The Pet Historian <https://thepethistorian.com/2017/12/26/more-about-cats-in-the-1950s-felixs-general-store-seattle-washington-1956/>

This catalog published by Katnip Tree Company reveals the improving living standards of indoor pets, especially cats, even in the anthropocentric period. In 1933, company owner Daniel D. Yoder adopts a black and white kitten he named “Felix”. Observing that in the 1950s, there were no products other than stuffed mice and catnip for cats living at home, Yoder designs many

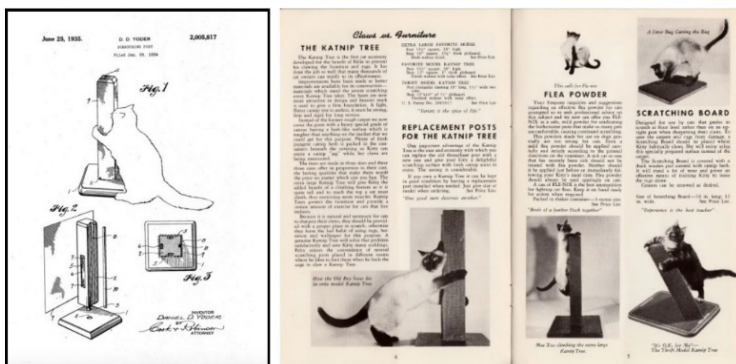
products for the needs of his cat Felix and names his brand, which includes products for pet needs (Figure 3). In the catalog, it is possible to come across many products that we still use for our pets, such as hygiene kits, cat litter, nail clippers, and carrying boxes.



**Figure 3:** A page from the ‘Sanitation and Hygiene’ section of the catalog & Felix Carriers (1956).

**Source:** The Pet Historian <https://thepethistorian.com/2017/12/26/more-about-cats-in-the-1950s-felixa-general-store-seattle-washington-1956/>

In 1934, Yoder included in his catalog the product patented as US2005817A-United States “Cat Scratching Post”. The product is patented with the definition of, “Scratching devices, e.g., for cats may be attached to walls, doors, and furniture, etc. may include cat housing, feeding device, toys, perch, etc. climbing posts including scratching devices, litter boxes with abrasive surface” (Figure 4). It is known that the “Cat Scratching Post” is a design developed to prevent cats from harming the equipment in the interior and is still used today.



**Figure 4:** Cat Scratching Post, invented by Daniel D. Yoder illustration & catalog pages.

**Source:** The Pet Historian <https://thepethistorian.com/2017/12/26/more-about-cats-in-the-1950s-felixa-general-store-seattle-washington-1956/>

The pet products sold in the 1950s and 60s reveal the impressions of the human-animal symbiosis of the period. Some of these products are flea powder comb, vitamin-rich and sugar-free reward yummys, fancy dog and cat collars, dog boots, and cat litter specially designed for cats and dogs (Figure 5). These products, which are designed for the hygiene and comfort of pets and their owners, can be considered the clearest evidence that animals have begun to live indoors.

Before 1960, it can be said that there was an amensal relationship between human and animal species in the focus of the anthropocentric approach. Amensalism can be defined as a type of relationship that develops between two species, one of which is damaged while the other is not affected. However, in this process, it has been observed that pets are included in common life with humans, and these products have started to become widespread by designing special products for pets.



**Figure 5:** Dog booties & dog, cat collars & Macy's Kennel Shop & The Comb-a-Flea Atomizer

**Source:** The Pet Historian <https://thepethistorian.com/2018/01/26/winters-here-vintage-dog-booties-from-new-york-city-and-hollywood/>

The anthropocentric approach before 1960, which we can categorize as the old paradigm, evolved into the ecological approach, which we can describe as the beginning of the new paradigm, in the 60s. In the 60s, a perspective that evaluates the human together with the environment in which he exists began to dominate (Table 1). The ecological system approach considers the individual as a



living being in the environment and considers the environment while evaluating the behavior of the individual.

Man is a dynamic entity intertwined with his environment, and the integrity that exists between man and the environment is effective on human behavior (Ashman and Zastrow 1990:3). Therefore, human life has evolved into a more sensitive approach to the environment they live in, and environmental awareness has begun to develop.

**Table 1:** Development of Human and Animal-Centered Approaches

Before 1960	Anthropocentric Approach	Old Paradigm	Amenal relationship Symbiotic relationship
1960	Ecological Approach	New Paradigm	
1970	Ecocentric Approach		
1980	Eco-system Approach		
After 2000	Ecosphere Approach		

**Source:** The table created by author

“Du Say’s Pet & Seed Company”, which was established in 1947 and started to become widespread through its branches in the 1960s and 70s, namely in the new paradigm period, published a catalog mainly on pet indoor furniture in 1975, giving an idea about the lives of pets at that time (Figure 6).



**Figure 6:** Du Say’s Pet & Seed Company original catalog (1975).

**Source:** The Pet Historian <https://thepethistorian.com/2017/09/15/a-canine-supermodel-of-the-1970s-meet-pooch-of-du-says/>

The catalog published by the company, headquartered in New Orleans Louisiana, USA, can be said to be clear proof that the modern pet industry is beginning to form. This catalog, which is proof of the indoor life of dogs living in the gardens and kennels of houses until the 60s, includes pet furniture and

special accessories (Figure 6). In the year it was published, articles were written in the local press about the catalog, which made a lot of noise, and the changing life of pets came to the fore as a news item.

According to a 1980 survey of 7,500 households by MRCA Information Services, a Stanford-based market research firm, there were 46.2 million dogs and 36.9 million cats adopted as pets in the United States. By 1987, this number had changed to 57.8 million domestic cats and 49.4 million domestic dogs, and the number of domestic cats exceeded the number of dogs (URL 2). The fact that cats are easier to care for, and that a cat can easily be left alone for a few days without the need for care in a house with sufficient food, water, and cat litter has been one of the important factors that increase the number of cats living in the house. However, the fact that dogs are in more dynamic communication with their owners and that they constantly need to go out for a walk has been effective in changing this rate.

According to a 1986 study by the Pet Food Institute in Washington on cat and dog food sales in the United States, cat food sales were \$2.166 billion and dog food sales were \$3.453 billion. While the number of cats adopted as pets is higher than the number of dogs, the number of living in residences is increasing by at least 4% per year due to an increasing demand since cats consume less food and are easier to care for themselves (URL 2).

In the 80s and 90s, TV programs, serials, and movies, in which pets were included in our daily lives and acted as family members, were watched with great admiration, and were inspiring for pet owners. “Lassie”, which was screened as a serial movie between 1943-48, the Snoopy cartoon series that started to be broadcast in 1972, “Beethoven”, which was screened in cinemas as a movie series between 1992-2014, the companion wolfhound “Samantha” in “I am Legend” movie in 2008, “One Hundred and One Dalmatians”, which made children love dogs with cartoons and movies between 1961-2021, “Scooby Doo” that was broadcasted as a cartoon on ABC television between 1969-1986, are some of the first pet-themed productions that come to mind. These and similar productions, in which animals appear as members of the family and emphasize the importance of their feelings and well-being, have been triggering factors for people to live together with animals.

With the increase in environmental pollution, global warming, and the natural disasters that develop due to these, the “Ecosphere Approach”, which is based on ecology and the view that the ecosystem should be protected together with all the living things in it, has started to develop after the 2000s. It includes



the environment in which living things interact. Therefore, all organisms and species in the world cling to life in the presence of each other. Damage or extinction of anyone negatively affects the entire ecosystem, putting the ecosystem at risk.

No living species on earth has any “superiority” over any other species, including humans. However, species have different characteristics and biological abilities from each other. While the biology of each species regulates its relationship with other species, this phenomenon falls within the scope of ecology. Ecology includes man as a living being, along with all other species. The most important feature that distinguishes humans from other species biologically is their high awareness and developed brain activities. Thanks to this ability, human tries to meet nutritional activity, which is a biological need, by raising plants and animals (Savaş & Yurtman & Töl, 2009).

When it comes to the 2000s, it is seen that the activities for the welfare and protection of animals have increased. The human-animal relationship has been expressed in legal regulations and the welfare of animals has been tried to be ensured in the minimum common. While experiments on animals cause great reactions, hunting for extinct animals is tried to be controlled with great sanctions. Respecting the welfare level of animals, accepting the existence of their feelings and senses, and being sensitive even when they are being worked are indicators that people’s perspectives have changed, and the level of empathy has increased. Media channels also contributed significantly to creating this awareness and increasing sympathy towards animals in society. At this point, after 2010, especially with the spread of smart devices, social media platforms, which have an important place in all areas of life and have a high number of users, have also become factors that support sensitivity towards animals. On social media channels such as Instagram, Facebook, and YouTube, pet pages with a high number of followers and accounts managed by their owners attract great attention and represent the indispensable place of animals in human life.

By the 2000s, animals take their place as indispensable individuals in our homes. When the living spaces, which are described as homes, are designed by considering the ergonomic characteristics of animals living in the same place as humans (symbiotic life), environmental harmony will be improved, and animal welfare will also be ensured.

Pet spaces for symbiosis cannot be designed with jewelry and items added to the space, unlike spaces designed for human users. It can be said that the place we live in is defined as a common living space for humans and animals, thanks

to the practical details that were added to the interior design during the project design process according to the design approach developed within a symbiotic life, facilitating our lives with our pets, providing hygiene, and producing solutions for self-care needs (Yurttaş & Altuncu, 2022).

In this part of the study, in the new paradigm process after the 2000s, symbiotic spaces that exhibit human-animal symbiosis and that were realized during the design phase of interior arrangements were selected as a sample, and qualified interior details were conveyed.

The first example is an apartment of 32 square meters and a 2+1 layout, located in a high-rise building, designed by INDOT Interior Design, based in Taipei, The Republic of China, in 2020. The high-ceiling apartment with wide window joinery from floor to ceiling was designed with an open plan so that the light can dominate the entire space. Indoor spaces are planned only in wet areas to create privacy, while the bed section is separated by a specially designed divider unit for pets and homeowners. Designed as a multi-purpose section in the living space, this special module served as a working and eating-drinking area for homeowners and created a space for pets to perform activities such as climbing, jumping, hiding, and sleeping (Figure 7).



**Figure 7:** The original apartment plan and open plan were designed by Xindian Sunshine House (2020).

**Source:** Indot Design <https://www.indotdesign.com/32p-1>

Another example is the residence with the theme of “Wild Cat Forest” designed by ATDESIGN, based in The Republic of China, in 2019 for host Yang Jiehua and his 21 cats. To protect the physical and mental health of the cats, a module consisting of steps and sleeping areas for cats were designed in the center of the house. The stepped structure, which allows cats to do their daily exercises and to go upstairs by making great use of daylight, is a functional detail for both the owner and the pets. Shelves in the form of steps on the wall are used as storage areas for the owner and as a walking platform for cats. In order not to cause hygiene and order problems due to the high number of living things in the house, a space concept where functionality is at the forefront and a small number of interior furnishings are included has been adopted. Ou Song boards (OSB Board), white painted metal material, wooden boards, and hygienic fabrics were used in the design of the house, which is an example of a common living space (Figure 8).



**Figure 8:** Ou Song board is characterized by environmental protection, moisture resistance, fire prevention, and deformation (2019).

**Source:** Gooood web <https://www.gooood.cn/wildcats-forest-china-by-atdesign.htm>

## 5. CONCLUSIONS

Within the scope of the study, the period before 1960 was handled as an Anthropocentric approach based on a human-oriented mentality, and it was determined that human-animal interaction was at the level of an “Amensal Relationship” in this process. By the 2000s, while the idea that nature should be evaluated with all living and inanimate beings living in it became widespread, the ecosphere approach developed as an inclusive principle.

Symbiotic life, which brings a proposal to construct a common life to the changing needs of the 21st century, should be considered as a solution proposal that will balance human-animal relations. In this process, the effect of pets, which are included in people’s lives as family members, on interior design has started to gain importance. It has been evaluated within the scope of the study that our interior spaces, where we live in common, should be arranged by the human-animal scale and comfort conditions and the importance of spreading this approach. Within the scope of the research carried out in this direction and when the findings are evaluated, it has been determined that the number of space practices designed and implemented to develop a common life is increasing day by day, and the welfare of animals is given a high level of importance, especially in residential buildings. At this point, the importance of spreading the view that all kinds of interior spaces where we lead a common life should be arranged by human-animal scale and comfort has been determined and it has been determined that it should be evaluated as an approach that provides. It is suggested that the subject should be included in the design, interior architecture, and architectural education processes and that it should be the subject of platforms such as project design lessons, workshops, and student clubs.

On the other hand, it has been determined that the subject has deficiencies in methodological and theoretical terms, and it also needs improvement in terms of literature. However, it has been understood that there is no unity of definition even in the descriptive concepts of the approaches that discuss the possibilities of the symbiotic life of the human-animal duo in the interior. In addition, in the findings obtained, it was observed that pet-friendly interior design approaches related to symbiotic life were examined for individual samples.

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