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About

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Preface

Dear Readers,

IDA: International Design and Art Journal, which set out to accompany you on the rich and exciting journey of the world of design and art and to contribute to scientific discoveries in these fields, has been addressing important issues at the intersection of science and art since its establishment and providing the latest developments in this field. is following. Our journal has reached an important position in the academic community by being included in the databases of nationally and internationally renowned universities and leading indexes. We are happy to publish our tenth issue as of June 2024. This success has been made possible by your contributions, our valued readers, and our Editorial and Advisory Board, who are experts in their fields.

I would like to express my gratitude to our Field Editors, Referee Board, Language Editors, Assistant Editors, and Technical Support Team, who contributed to the preparation of this issue. As IDA: International Design and Art Journal, with your support and contributions, we are determined to continue our mission of supporting scientific progress and academic success in the field of design and art, and we are very pleased to progress together on this path. We hope we continue to be an inspiring resource for you and help strengthen the bond between design and art.

Assoc. Prof. Dr. M. Kübra MÜEZZİNOĞLU
Associate Editor

Önsöz

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Tasarım ve sanat dünyasının zengin ve heyecan verici yolculuğunda sizlere eşlik etmek ve bu alanlarda bilimsel keşiflere katkıda bulunmak amacıyla yola çıkan **IDA: International Design and Art Journal**, kuruluşundan bu yana bilim ve sanatın kesişim noktasında yer alan önemli konuları ele almakta ve bu alandaki en son gelişmeleri takip etmektedir. Dergimiz, ulusal ve uluslararası düzeyde tanınmış üniversitelerin veri tabanlarında ve önde gelen indekslerde yer alarak akademik camiada önemli bir konuma ulaşmıştır. Haziran 2024 itibariyle onuncu sayımızı yayınlamanın mutluluğunu yaşamaktayız. Bu başarı, siz değerli okuyucularımızın ve alanında uzman Yayın ve Danışma Kurulumuzun katkılarıyla mümkün olmuştur.

Bu sayının hazırlanmasında emeği geçen Alan Editörlerimize ve Hakem Kurulumuza, Dil Editörlerimize, Yardımcı Editörlerimize ve Teknik Destek Ekibimize katkıları için teşekkürlerimi iletiyorum. Sizlerin desteği ve katkılarıyla IDA: International Design and Art Journal olarak, tasarım ve sanat alanında bilimsel ilerlemenin ve akademik başarının desteklenmesindeki misyonumuzu sürdürmeye kararlıyız ve bu yolda birlikte ilerlemekten büyük memnuniyet duyuyoruz. Umarız sizler için ilham verici bir kaynak olmaya devam eder ve tasarım ile sanat arasındaki bağı güçlendirmeye yardımcı oluruz.

Doç. Dr. M. Kübra MÜEZZİNOĞLU
Yardımcı Editör

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Research Article

From tools of criticality to mechanisms of control: Instructions in art from the 1960s to the 1990s

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Abstract
This research examines instructional texts in art practices from the 1960s to the 1990s. Instructional texts refer to written words by artists for thought experiments and participatory actions. Scholars have previously examined the interplay between instructions and the specific art forms they generate, revealing the complex relationship between control and freedom, order and disorder, as well as organization and risk. However, these relationships are contextually nuanced. By incorporating the social function of instruction as a critical tool and control mechanism, this research adds complexity to the current scholarship on instruction between participatory agency and authorial control. This research focuses on two historical periods: the 1960s and the 1990s. Whereas the 1960s signaled the transition to a post-industrial society that sought creative labor and adopted a more flattened organizational model, the 1990s witnessed the standardization and globalization of demands for entrepreneurial and artistic labor. To explain the resurgence of instructional texts in the 1990s, this research contextualizes these texts within a broader social framework. It argues that commercial co-optation has transformed these instructions' critical power against the bureaucratic top-down management model in the industrial era into an apparatus of control over creative laborers cultivated in the post-industrial age.

Keywords: Instructional texts, Work culture, Socially engaged art, Participatory art

Extended Abstract

Introduction: Art instruction can manifest in various forms, ranging from textbooks and manifestos to Fluxus scores and Minimalist sketches. A review of existing literature reveals that the notion of instruction has often been associated with institutional didacticism, serving as an authoritative means of organizing, sustaining, and disseminating knowledge. Within the realm of art, written instructions also impose a structure between the instructor and the instructed. Some allow room for diverse interpretations by participants, while others with predetermined outcomes aim to perpetuate existing artistic conventions through standardized replication. Nevertheless, whether it's Fluxus scores that encourage diverse readings or authoritative notations that govern production and regulate artistic endeavors, instruction invariably positions itself along a spectrum between participatory agency and authorial control. Numerous studies have explored the formal tension between participation and artistic control in the context of instruction. However, the social and political dimensions of instructional practices in art have not received substantial scholarly attention. This research adds complexity to the prevailing analysis of instruction's interplay between participatory agency and authorial command by introducing the social function of instruction as both a critical tool and a control mechanism. Initially conceived as a tool to challenge the top-down management system of our society during the 1960s, the role of instruction has shifted from a means to encourage open interpretation to an instrument for organizing and overseeing emerging forms of creative labor in the contemporary cultural landscape. By scrutinizing art instruction as a potential field of command and execution, this study underscores the susceptibility of historical avant-garde art forms to economic, political, and cultural hegemony. In a word, this research redefines instruction, with its dual characteristics of critique and discipline, as a cultural apparatus that can either foster revolutionary societal change or condition participants' perception of and response to their social environment, particularly within the context of their work environment in this study.

Purpose and scope: This paper seeks to address two main questions. First, it aims to interpret why instructions from vastly different artistic fields were grouped under the term "art-by-instruction" during the 1990s. Second, it explores the

motives behind the appropriation, fetishization, and commercialization of these instructional texts, especially if not primarily intended to inspire participants' creativity. By delving into the social and political connotations and functions of instructions, this research strives to shift the prevailing perception of instruction from being merely a technical tool to a cultural apparatus. The paper's scope encompasses instructional texts within the realm of artistic practices spanning from the 1960s to the 1990s.

Method: This research employs a contextual analysis method to situate the instructions within their historical and social settings. Given that certain instructions from the 1990s were directly appropriated from the 1960s, the emphasis of this research is less on the actual content of these instructional texts and more on how they were framed socially. The study examines the various ways these instructions were gathered, disseminated, and promoted in two distinct historical periods. By embedding instructional texts in their social contexts, with a particular emphasis on broader labor dynamics in society, this research redefines instruction as a cultural apparatus that encompasses both its role as a tool for revolutionary critique and as a means of disciplinary control.

Findings and conclusion: Although there have been academic discussions on instruction-based art, they typically focus on how instructions give rise to specific artistic features. Furthermore, scholars in participatory art scrutinize the social dynamics emerging from participatory practices and the social conditions that facilitate such artworks. Nevertheless, these studies of participatory art have yet to delve into the relationship between instructional practices in the art world and instructions within workplaces or commercial settings. This research, through an examination of the social and political dimensions of instruction and a case study of the do-it project, contends that avant-garde instructions played a pivotal role in shaping the work environment of the 1960s. These same critical tools were subsequently appropriated by corporations and institutions to cultivate a work mindset suited for the emerging cultural economy. While certain instructions promoted anti-war sentiments and a democratizing spirit during the 1960s, the implementation of neoliberal policies from the 1970s onward, coupled with the shift to a post-industrial society emphasizing services, information, and research sectors, saw these same instructional texts being employed in the 1990s as a means of social control over new creative laborers. However, it's important to note that this research does not intend to assert that art is solely manipulated by external societal forces, as art can also serve as a powerful tool for challenging dominant powers. By bridging the realms of art and the workplace and connecting artists and participants with the workforce, this research explores the intricate relationship between art and society. By exposing the ideological influences behind the creation and dissemination of different types of instructions, this study reveals that the control mechanisms inherent in instruction can also be harnessed as a potential tool for revolutionary change.

Keywords: Instructional texts, Work culture, Socially engaged art, Participatory art

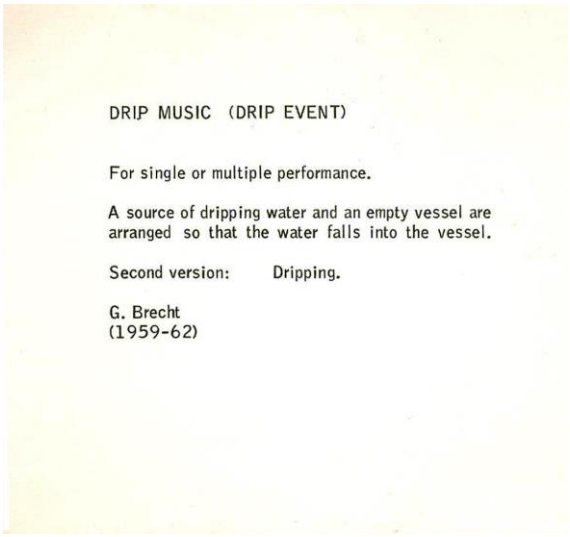
INTRODUCTION

During the COVID pandemic, *do-it* (home) was launched online via the Google Arts & Culture platform, sending art instructions to isolated individuals with the hope that they could make art during lockdowns. The pandemic has changed many white-collar employees' sites of work from the office to home. In our post-pandemic era, companies continue to grapple with issues of work flexibility, and governments are managing the transition of workers from full-time to part-time employees. While previously instructions flowed from the management level to workers to sustain a corporate order, today workers are receiving less restrictive, more motivating instructions, which facilitates their adjustment to the new system. Collective discussion and cooperation have been continuously replaced by self-help and self-management. As the problem of shifting the burden to individual workers is becoming more exacerbated today, it is significant to discuss how instructions, including art instructions, can be manipulated not to empower the participants but to make them submissive laborers who are willing to enforce self-administration. More pertinent to this research is the question of how art instructions respond to, influence, and are shaped by the prevailing modes of work in society.

Instructions in art encompass a diverse range of forms, spanning from textbooks and manifestos to Fluxus scores and Minimalist blueprints. Instructional texts in this study contain a list of imperatives that invite the participants' action upon objects of everyday life, or they can be thought experiments of that action. For example, George Brecht's *Drip Music* (1962) (Figure 1) instructs the participants to find a water source and put an empty container underneath to catch the water, creating the sound of dripping. Instruction-based art reached its first peak in the 1960s through the linguistic propositions of Conceptual art, technical instructions to produce Minimalist sculptures, operational instructions in Happenings, and event scores in Fluxus. Even

though these art movements had distinct goals, they were interconnected through key figures such as John Cage, Henry Flynt, and Robert Morris. Buchloh (1990: 107) notes that conceptual artists denied any connection to or knowledge of the Fluxus. However, La Monte Young, a central figure in New York's Fluxus art scene, dedicated his instructional piece *Compositions #10* (1960) to Robert Morris, a conceptual artist and a Minimalist who was deeply associated with the Fluxus movement. Instructions facilitated the formation of a large art community in the 1960s because these instructions were sent out to friends on postcards and were written in dedication to one another. Though these artists from different movements had distinct conceptual and aesthetic inclinations, they were actively engaged in the democratization of art by relinquishing artistic authority and control.

In the Fluxus Manifesto, Maciunas advocated a world purged of bourgeois sickness and promoted a "non-art reality to be fully grasped by all peoples, not only critics, dilettantes, and professionals" (Maciunas, 1963). Fluxus scores-initiated events not in institutionalized art spaces but on the street, at festivals, and in artists' apartments. The minimalists strategically employed instructions to delegate the production of their sculptures to local factories. Conceptual art exhibitions such as *Working Drawings and Other Visible Things on Paper Not Necessarily Meant to Be Viewed as Art* (1966) at the School of Visual Arts Gallery, New York, abandoned traditional exhibition formats, displaying Xeroxed prints with notes and instructions in loose-leaf binders for viewers to flip through. To sum up, in alignment with the spirit of the anti-war and civil rights movements, artists from diverse art movements in the 1960s held the shared belief that by encouraging the participation of the public, art could enter the realm of daily life. The celebration and aestheticization of mundane activities in the 1960s encouraged participation in the art world by non-experts. Textual instructions became one of their conceptual and participatory strategies to engage a wider audience.


DRIP MUSIC (DRIP EVENT)

For single or multiple performance.

A source of dripping water and an empty vessel are arranged so that the water falls into the vessel.

Second version: Dripping.

G. Brecht
(1959-62)

Figure 1. George Brecht, *Drip Music*, 1959-63

However, significant social and political changes occurred from the 1960s to the 1990s. Participatory activities in the arts can also be co-opted by the industry as a fetishized experience through its encompassing power of administration and capitalization. During the 1990s, there was a revival of instruction-based art practices, marked by the resurgence of participatory approaches. Of particular note is the *do-it* project initiated by curator Han Ulrich Obrist, and artists Bertrand Lavier and Christian Boltanski. While *do-it* is supposed to highlight "interpretation in its various permutations and iterations" (Curators International, 2013) as opposed to the art world's fetishization of the unique art object, there are numerous publications (Figure 2) of this project as collections of instructions, none of which feature the realization by local practitioners and participants. This poses two questions: First, why were instructions from drastically different artistic disciplines grouped under the same name "art-by-instruction" in the 1990s? Second, if not to stimulate the innovative output of participants, what drives the appropriation, fetishization, and commercialization of these instructional texts?

Figure 2. Flow diagram developed through the coding phases of the research

METHOD

This research adopts the method of contextual analysis that frames the instructions in their historical and social milieu. Because some of these instructions in the 1990s were directly appropriated from the 1960s, this research focuses less on the content of the instructional texts than on their social framing. This research aims to ask the following questions:

1. What distinct characteristics define these instructions, and how do these features offer insights into the social contexts in which they originated?
2. To whom were these instructions primarily directed?
3. Where were these instructional texts exhibited and circulated?
4. What kind of action or inaction was advocated by these instructions?
5. How did the instruction affect the community of participants?

By asking these questions, this paper studies the ways these instructions were collected, circulated, and promoted differently in two historical periods. By placing instructional texts in their social contexts, with a particular focus on labour relations in society at large, this research defines instruction as a cultural apparatus encompassing the functions of both revolutionary critiques and disciplinary control.

FINDINGS

Instructional Texts between Participatory Agency and Authorial Control

As modes of communication shift in different artistic contexts, instruction assumes a diverse range of functions, such as notation, score, sketch, social pedagogy, or direction for social action. From classroom teaching to manual guides, the concept of instruction has often been associated with institutional didacticism as an authoritative manner of structuring, maintaining, and transmitting knowledge. While oral and performative instructions embody the ordering subject, textual instructions separate texts from the speaker. The decontextualization of speech enables texts to reach a status of abstraction, objectivity, and authority (Olson, 1989). Textual instructions in the form of textbooks and user manuals sometimes suspend the identity of the writer in favor of an institutional identity, imparting readers abstract knowledge that can be repeated under the same situation. Because of their seemingly objective and abstract characters, textual instructions are used by the power to achieve infinite reproducibility of its authority (Anderson, 1983: 182). Textbooks, exhibition catalogues, campaign slogans, and religious scripts, among others, could fall under the administrative techniques of the authorities to impose social order on their readers.

Similarly, in the art world, textual instructions impose a structure between the instructor and the instructed. Textual instructions have taken various forms in performance, participatory art, and conceptual art, among others. Because an artist's identity is usually manifested along with the instruction and textual instruction in art contains both embodied words and stabilized reproducibility, extending artistic authority to the public when the artists claim to delegate their authorial control to the participants. Instructions are frequently employed at the beginning as documentation that stabilizes ephemeral ideas and art forms so that they can be produced or enacted in the future (Peters, 2009), as we can observe in musical notations and sketches. When following or interpreting these instructions, the social relationship between creators, curators, performers, and the audience can be perpetuated or challenged. In the Fluxus movement, instructional texts are used by artists to document their performances, which are subsequently dedicated and mailed to other artists as an emblem of friendship (Bech, 2008: 10). Although transient concepts could be consolidated by texts, certain activities emphasize individual interpretations of these fixed instructions. Instructions are enacted by individuals who are not the creators of the scores, and these scores "are open to variation and interpretation" (Knowles, n.d.). In a discussion of Fluxus's performance in the 1950s, Dezeuze (2008: 26) emphasizes that not only did performers use the technique of indeterminacy to carry out instructions, but they also had very different readings of instructional signs to begin with. However, even with these more flexible instructions in avant-garde art movements, artists sometimes resist too much performative improvisation of the scores, as Knowles notes "I am not at all flexible or loose about what goes on… I've sometimes had people try to interject ideas or performances of their own. But this is not allowed, because what I want people to do with the piece is to see how really simple things can be done if you concentrate on what you are doing" (Knowles, 2012). In a word, even with the more open-ended and loose instructions, there has been tension between notational discipline and interpretative agency.

On the other hand, some fixed instructions that produce preordained results attempt to self-perpetuate existing forms through a standardized reproductive process. First designed by choreographer Rudolf von Laban in the 1920s in Weimar Germany, Labanotation is a complex symbology to codify the directions, body parts, level, and duration of human movement in space, with the aim of producing repeatable and standardized movements. The authoritative Labanotation was then used to purify the German dance of alien gesticulations (Laemmli, 2016: 10) when Laban became the Minister of Dance under Nazi Germany. The Labanotation aims to produce intended and homogenized outcomes, disciplining politicized bodies through codified scripts. However, at the same time, Laban expressed that those dancers "experience a complete spiritual reversal which elevates them above everyday attitudes of life" (McCaw, 2011: 89). The Labanotation results in the standardization of human bodies, conforming to a centralized idealization and extreme rationalism. But at the same time, there has been a sense of romantic expressiveness in contrast to the mechanization of the human body. Instructions from these diverse practices have not been clearly defined because of their lack of conceptual coherency and formal consistency. However, whether it be Fluxus scores that may allow diverse interpretations or authoritative notations that administer production and regulate the bodies, instruction always situates itself on this spectrum between participatory agency and authorial control. Extending from the inherent qualities of instruction, at which end of the spectrum different social-political mechanisms employ instruction is a matter of concern.

The Social-political Dimension of Instruction

Altshuler's "Art by Instruction and the Pre-History of *do-it*" is one of the very few essays solely dedicated to the history of instruction-based art. As an analysis of Avant-garde exhibitions, it overviews instructional artworks, discussing terms such as chance operations, audience participation, freedom of execution, and conceptual openness without resorting to the social background from which these practices emerged. He concludes that the *do-it* project is "enjoying in postmodern pastiche both nostalgia for the 1960s and accommodation with the institution" (Altshuler, 2013: 37). By postmodern pastiche, he refers to the title of the project, which combines both Jerry Rubin's *Yippie Manifesto* in the 1960s and the advertisement of Nike shoes. However, he abruptly ends the paper at a place where he could have analyzed the commercialization of previous avant-garde art forms.

Similarly, a few scholarly discussions approach instruction from an art historical perspective. The exhibition *Fluxus scores and instructions: The transformative years* (2008) was launched at the Museum of Contemporary Art, Denmark, to present instruction manuals from the Fluxus movement. This exhibition

catalogue presents scores and event cards in historical narratives, containing personal memories of the art community and the movement. Scholars (Bech, 2008: 9-12; Hendricks, 2008: 14-19; Anderson, 2008: 20-23) provide different perspectives on these instructions as guidance for performances, narratives of past events, and descriptions of artworks. Young's (2012: 41) essay emphasizes the musical aspects of Fluxus' scores, which challenge its categorization as visual art. Kotz (2007) studies the objectification and depoliticization of language in art in the 1960s and 1970s while ignoring that many instructional texts are making functional political statements. Christian Paul (2019) explores the relationship between rule-based practices and the advent of new technologies. In general, these essays delve into the history of instruction-based art through its structures, formal qualities, or relationship with technological advancement. They lack a critical perspective to examine what social forces contribute to the emergence and endurance of instructions, how these social forces have been simultaneously shaped by instructional art, and specifically the relationship mediated by instructions between participants in art projects and the labor force in society at large.

Contrary to the formal approaches to the study of instruction-based art, Sherer (2016) considers Fluxus a social practice against the overtly bureaucratic institutions of bourgeois society. Even more explicitly, Oren (1993: 28) emphasizes the anti-art socialist campaign in Fluxus' artworks. The edited volume *The "do-it-yourself" artwork- participation from Fluxus to new media* highlights that instruction-based art practices are always contextually specific. Rooted in countercultural activist movements, instructions have been co-opted as entertainment services by institutions and forces of the capital (Dezeuze, 2010: 16). However, by using the phrase "do-it-yourself" artwork, Dezeuze is still maintaining a connection to the Utopian model of DIY culture in the 1960s and 1970s. This paper, however, opens another aspect of written instruction as a form of prescriptive ordering. Even the most open-ended instructions explicitly prescribe what to do and implicitly indicate what is not expected. As Kwon (2010: 229-239) suggests, the system of reciprocity in participatory art imposes an obligation on the audience to act while maintaining the artist's position of superiority. And such disciplinary practices may resonate with the participatory culture in our workplace.

Tying art with work culture, Buchloh's influential paper on conceptual art from 1962 to 1969 highlights the social background of the modern aesthetics of administration. Analytic propositions of early Conceptualism were trapped in scientific positivism and institutional validation. As the class of white-collar workers bloomed in the 1960s, the aesthetic characteristics of Conceptualism were influenced by this new workforce that hinged on the administration and distribution of resources instead of the production of material goods (Buchloh, 1990). The exhibition *Work Ethic* (2003) at the Baltimore Museum of Art is precisely a reflection of artists as new types of workers or service providers when there were paradigmatic shifts in society into the information economy and the experience economy. Bernes explores the relationship between the counter-cultural left and the dominant social structure of the 1960s, specifically between avant-garde art and work. Art is viewed as an experiment with imaginary alternatives to existing work conditions. Those experimental tools, terms, and coordinates of avant-garde art and experimental poetry were deployed by white-collar workers in the mid-to-late 1960s against the technocratic administration of society (Bernes, 2017). Using artistic tools and mindsets, these workers demanded more creative types of work and greater autonomy.

However, the potential of art to challenge the dominant ideology and social structure is often co-opted once it has achieved its goal. As early as the 1970s, Kaprow (1977: 8) worried that the experience of "happenings" and performance art could be applied to the commercial world as "sales training". Schiller (1989) warns us that the essential underpinning of democracy has been seriously damaged in the post-war years in the face of the continuous corporate co-option of public knowledge and cultural production. As the welfare state dwindled, it became a standardized practice to use participatory art forms to enhance workplace productivity and boost workforce morale through feedback and team-building exercises. In the United States, museums as the public sector transformed from providing service to the public to benefiting the corporate order (Schiller, 1989). Big corporations sponsor art institutions to promote their brand images, and employees of these corporations can visit the museum for free. Art functioned to lubricate the social environment so that the society as a whole, could function more productively. On the governmental level, social inclusion was the key concept in New Labour's cultural policy in the UK, which was backed up by the argument for the positive impact of social participation in the arts (Matarasso, 1997). Participatory art has been employed to enable the public to self-administer in the face of an increasingly privatized world. The practice of instruction-based art has been

deprived of its former function as a critical tool against the world of administration when authority is delegated to participants. Instruction has become a means to indoctrinate the public in self-responsibility and compliance, aiming to enforce a smoother and more harmonious social environment in the face of dwindling public services. Therefore, in the 1990s, the resurgence of instruction-based, participatory work signaled a more comprehensive commodification of our experience, demanding a new type of creative labor to create that experience.

Bourriaud is one of the first scholars to identify the social turn in the 1990s. His conceptualization of relational aesthetics expands on the Marxist notion of social interstice, a space that facilitates social interaction as a countermove against cultural industry and commercial spectacles. He advocates artworks based on human relations in a social context, denouncing commercialized art objects (Bourriaud, 2002: 5). However, in his promotion of relational art forms, he fails to consider that it is the human experience that was fetishized in the 1990s, and participatory art became a standardized practice in museums. The emphasis on events and projects rather than objects resonates with the shift from the industrial age to the post-industrial age when inter-human relations and conviviality in the service sector are treasured. Foster (2003: 21-22) coins the term "arty party" to describe these events and to criticize the fact that too often these curators and artists see discursivity and sociability in rosy terms. The fiercest critique of relational aesthetics comes from Claire Bishop, who argues that Bourriaud lacks validation of what good relational art is. She proposes the concept of "relational antagonism" in place of "relational aesthetics". "If relational art produces human relations," Bishop pointed out, "then the next logical question to ask is what types of relations are being produced, for whom, and why?" (Bishop, 2004: 65). Bishop champions art pieces that use dissonance and antagonism to expose power relationships between artists, participants, performers, and spectators. Bishop explains the social turn in the art world in the 1990s following the dismantling of the welfare state and the triumph of neoliberalism (Bishop, 2012). It led to a collective desire for a "decentred and heterogenous net that composes post-Fordist social co-operation" (Penzin, 2010: 89). The cultural policy in the UK managed to include marginalized individuals by leveraging art projects as a means of social amelioration. Simultaneously, it aimed to propagate the concept of individual self-reliance in the context of increasing privatization within governmental sectors. Once a critical tool against the top-down management system of our society, the role of instruction has shifted from a tool for open interpretation to an apparatus of disciplinary organization. It has been transformed into a mechanism for nurturing and controlling emerging categories of creative laborers in the new cultural economy.

Studies of instructions from other disciplines also render insights into the relationship between this specific cultural form and the new cultural economy. Shorey (2020: 122-128) argues that DIY instructions alternately challenge and contribute to corporate logic. In her exploration of two manual texts: issues of *Make:* magazine and DIY pamphlets distributed to General Motors employees, Shorey observed that as DIY practices generate innovative thinking, these practices can both strike against the corporate system of bureaucracy and inspire verve and creativity among the staff. In the same way, instructional texts in art can foster an artistic mindset among the participants, who might later create a better relationship with other staff, create innovative products, or question the current corporate system. Conor investigates instructional manuals for novice screenplay writers as a means to cultivate a compliant form of creative work within the new cultural economy. Instead of examining the direct relationship between instructional texts and corporate strategies like Shorey, Conor situates these instructions in the context of neoliberal, post-Fordist capitalism. In the new cultural economy, talents are "incubated, concretized, and made necessary, or even compulsory" (Conor, 2012: 123). These instructions exemplify a chaotic, precarious economy, contributing to a continuous sense of insecurity among cultural workers. They set up and maintain "relations of attachment to compromised conditions of possibility" (Berlant, 2006: 21). The same mindset of forging possibility and anxiety is manifested in *do-it* instructions. An instruction can reinforce an ideal subjectivity for participants to be successful in the cultural economy, rising to artist status rapidly, "you can become an (almost) instant artist if you follow these instructions" (Obrist, 2013: 66). It can also stress and perpetuate the romantic notion of an artist as a rebel, "Burn this book. ASAP" (Cantor, 2004). At times, it fuses the two agendas, "Do something unique that only you and no one else in the world can do. Don't call it art" (Barry, 2012). These instructions intensify the drive among the readers and participants to be more creative and innovative, while at the same time immersing them in a perpetual state of insecurity. These instructions produced by established artists offer a form of self-help not

only to emerging artists but also to other workers who aspire to be and are pressured to be more innovative in their careers.

To sum up, the social-political implications of instructions in art have not yet received much scholarly attention. This research complicates the existing analysis of instruction between participatory agency and authorial command by introducing the social function of instruction between a critical tool and a control mechanism. By examining instructions in art as a potential field of command and execution, this study highlights the vulnerability of historical avant-garde art forms to economic, political, and cultural hegemony.

The *do-it* project

This research selects the *do-it* project as a case study because it was the first time when many diverse practices using instructions were grouped together and promoted fervently. In 1993, Swiss curator Obrist and two French artists, Boltanski and Lavier, conceived of an exhibition project in which written instructions would circulate around the world so that each local interpretation and enactment would be different. Initially, twelve instructions were compiled and produced as a publication by AFAA (Association Française d'Action Artistique) under the Ministry of Foreign Affairs and Ministry of Culture of France. They were translated into eight languages and sent out as diplomatic dispatches to countries with which France established and maintained diplomatic relations (Obrist, 2013: 15). Because of the diplomatic gesture, these art instructions could be viewed as a strategy to promote a democratized form of art with open-endedness and audience participation, extending the cultural hegemony of the West to other parts of the world. In both the 1960s and the 1990s, instructional texts were circulated globally. Fluxus comprised a community of artists from the United States, Western Europe, Eastern Europe, Asia, and Latin America. The international postage system also allowed for minimalist sculptures to be manufactured and exhibited overseas based on instructions sent by the artist. However, as mentioned by Siegelaub in his conversation with Obrist, in the 1960s, international artists established friendships and gathered out of shared belief and interest (Siegelaub, 2013). Whereas in the 1990s, on the level of execution and circulation, these instructions were possibly functioning in part as propaganda or commercial slogans.

Not only were the organization and circulation of the instructions different, but also the publicization of these texts in the 1990s was divergent from the practices in the 1960s. Whereas in the 1960s, artists attempted to hand over authorial control to others; in the 1990s, artists were promoted as ideal subjects. In the introduction to the *do-it* project, Obrist sets up a few "rules of the game" on how to execute these instructions in museums. He proposes that "at the end of each *do-it* exhibition the presenting institution is obliged to destroy the artworks and the instructions from which they were created, thus revoking the possibility that *do-it* artworks can become standing exhibition pieces or fetishes" (Obrist, 2013: 18). However, it is not the objects but the artistic subjects that are promoted by the project. The instructional publication of *do-it: the compendium* has been arranged alphabetically according to the artists' initials. The promotional slogans on Google Arts & Culture (n.d.) include "Free your inner artist", "make a wish with Yoko Ono", "Gilbert & George's rules to live by", and "cook with Marina Abramovic". Artists became role models for others to follow.

When the *do-it* exhibition was opened in 1997 at Independent Curators International, Altshuler wrote an essay about instruction for its exhibition catalogue, in which "art-by-instruction" was loosely defined as a "modern tactic" to generate work by following written instructions and "insert chance in the realization of an artwork" (Altshuler, 2013: 29). This essay attempts to group different art forms together to validate the idea of instruction-based art. However, it seems that this definition is restricted in its teleological conceptualization. First, many instructions are not intended to be used to produce artwork. For example, Yoko Ono's *Cloud Piece* (1963) invites the readers to imagine putting dripping clouds in a hole, which can only exist as a poetic thought experiment (Figure 3). Gilbert & George's *Ten Commandments* (1995) comprise ten principles in life for others to follow. It becomes problematic as one wants to identify where a realized artwork is in this piece -in the actions of the participants who follow the commandments or in the internalization of the commandments as a discipline. In addition, Altshuler defines instruction from the point of view of the artists, while these instructions are meant to be executed by participants other than the artists who designed them. In his attempt to define art-by-instruction through art historical narratives, Altshuler only selects examples that fit the pre-established concepts such as chance operations, the delegation of authorial control, and the tension between

idealization and materialization, while ignoring the social-historical conditions for art-by-instruction to exist and to thrive. It is impossible to define art-by-instruction only in artistic terms because instructions transverse drastically different artistic genres. By situating instruction in its historical and social context, from the critique of object fetishism to the fetishization of artists, this research conceptualizes instruction as a changing apparatus from a critical tool to a control mechanism.

Figure 3. Yoko Ono, *Cloud Piece*, 1963/2016, Modern Art Oxford, United Kingdom

This research does not try to single out the *do-it* project, as many other art practices since the 1990s have also used instructions to incubate ideal creative laborers. With ironical wittiness, Peter Fischli and David Weiss painted ten tips on how to work better (Figure 4) on an office building in Zurich in 1991. But it could also be read as helpful adages at the workplace for those "who appreciate both the artwork itself and the real-life applicability of its ten cheerfully common-sense directives" (Dover, 2016). In a more complicated case, before her excruciating performance of living paintings, artist Vanessa Beecroft handed to her models a set of textual instructions that read, "Do not talk, do not interact with others, do not whisper…be simple, be detached, be classic, assume the state of mind you prefer… interpret the rules naturally…" The instructions exerted her authoritative power over vulnerable female participants at work (Steinmetz et al., 2006: 753-783) (Figure 5). The instruction is composed of both disciplines of action and freedom of interpretation, underscoring the complexity of behavioral patterns in contemporary workplaces - be composed and be creative. In all, instructions in art since the 1990s have gradually shifted to mechanisms of control that reflect our mode of participation in the workforce.

Figure 4. Peter Fischli and David Weiss, *How to Work Better*, 1991, Guggenheim

Re-orientating Instruction

Altshuler traces the lineage of art-by-instruction back to the early 20th century. In his narration, the progenitor of modern art-by-instruction is Marcel Duchamp. His wedding gift to his sister, *Unhappy Ready-Made* (1920), is an instruction for the couple to hang a geometry book on the balcony and let the wind flip through the pages, choosing its own problem. Due to the intimacy of the instruction as a gift to two family members, Duchamp's work can be seen as an instruction of the pre-industrial age. Unlike instructions of the industrial era, early instructions were passed to only a few makers, as "most items of domestic technology up to the 1850s were manufactured in the home or on the farm, and most information describing their use was transmitted by word of mouth" (Schumacher, 2018). As the means to use technology became democratized, cars, TV sets, and washing machines entered the domestic sphere. User manuals were also simplified, standardized, and widely distributed. It may not be a coincidence that Haynes, a publishing group solely dedicated to producing user guides, was founded in 1960 when a large quantity of art-by-instruction works emerged. What makes instructional texts in the 1960s different from Duchamp's instruction from the previous era is how these texts were produced, distributed, and received. Yoko Ono's *Grapefruit*, a collection of 150 instructions, was originally published in 1964 by Wunternaum Press in Tokyo in an edition of 500. The Fluxus aimed to reach the largest possible audience, producing prints, kits, and small objects disseminated at low prices through artist-run Flux shops or by mail order (Hanley, 2011). In the 1990s, as previously discussed, instructions were employed by institutions to cultivate creative laborers. Tracing the history of instruction from family how-tos in the pre-industrial age to user manuals in the industrial age and later to self-help mottoes in the post-industrial age, this paper exposes a strong connection between instructions in art and instructions at work. In contrast to Altshuler's definition, instruction should be dislodged from autonomous artistic disciplines and engage with a broader realm of cultural studies that identify the shared belief of what constitutes good workmanship and answer how instructional texts in art can foster ideal laborers.

On the one hand, instruction in art can be used as a critical tool against the highly administered world, embracing chance, unpredictability, and participation in artworks; on the other hand, instruction manages the participants under the guise of freedom of interpretation. Mills articulates this duality of the "cultural apparatus". While a cultural apparatus seems neutral because it is "the lens of mankind through which men see; the medium by which they interpret and report what they see" (Mills, 1967: 406), a circle of institutional power may be established around the cultural apparatus, undermining public discourses by producing complacency and fetishism of commodities. For example, participatory art may be employed by cultural institutions to create satisfying experiences that eclipse the inherent problems in our society. On the other side, there is a bastion of intellectuals and artists who produce critical reflections. Mills (1960) considers "cultural apparatus" a "possible, immediate, radical agency of change." Mills believes that the opposing sides of control and criticality are connected, and he used the term "cultural apparatus" to capture this inter-connection (Sawchuk, 2001: 35). In the same manner, the opposing ends of control and freedom, co-optation and criticality, can be mediated through a piece of instruction.

Instructions are less defined as artistic tools to produce a piece of work but more as cultural apparatus through which information is produced and distributed and from which we understand the world. While this apparatus can mediate critical art forms, it can also be controlled by dominant institutional powers. In this research, instruction as a critical tool has been later co-opted by the logic of post-industrial society to enforce entrepreneurial self-management among the labour force. In a word, instruction, with its dual qualities of critique and discipline, is redefined in this research as a cultural apparatus that either encourages revolutionary change in society or conditions the participants' understanding of and action upon their social milieu, which refers to their work environment in this study.

CONCLUSION

While there are a few scholarly studies on instruction-based art, they usually discuss how instructions generate certain artistic characteristics. In addition, scholars of participatory art analyse the specific social relationships created by participatory practices and the social conditions that make participatory artworks possible. However, these studies of participatory art have not explored the relationship between instruction in art

practices and instructions at the workplace or in the market. By tracing the social-political dimension and the modern history of instruction, with a case study of the *do-it* project, this research argues that avant-garde instructions helped shape the workplace environment in the 1960s, and the same critical tools were co-opted by corporations and institutions to create a work mentality suitable for the new cultural economy. While some instructions fostered the anti-war and democratizing ethos in the 1960s; as Neo-liberal policies were implemented from the 1970s onward to ameliorate economic stagnation and as the transition to the post-industrial society encouraged the development of services, information, and research sectors, the same instructional texts were implemented in the 1990s as a form of social control of new creative laborers. However, by studying the social conditions that make certain forms of instruction possible, this research does not aim to state that art is manipulated by external social dynamics, because art can also be used as a critical tool against hegemonic powers. By connecting art space with workspace and by bridging artists and participants with the workforce, this research explores the dialectical relationship between art and society. By exposing the ideological forces behind the production and distribution of different types of instructions, this research reveals that the control mechanism of instruction can also be turned into a "radical agency of change" (Mills, 1960: 23).

Authors' Contributions

The author contributed 100% to the study.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

This study does not require ethics committee approval.

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Research Article

Posthuman domestic space as a becoming-machine in performance art

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Abstract
Domestic space can be considered a cross-disciplinary subject, not only of art and architecture but also of philosophy, sociology, geography, and anthropology, thanks to the multidirectional correlations. This paper examines domestic space as a cross-disciplinary subject, too, with a qualitative phenomenological research method because this research approaches space as the collection of experiences, like in phenomenology, concerning the perception and the body. Through an interdisciplinary literature review, the notions of domesticity and dwelling are investigated focusing on the notion of *experience.* Following these notions, the concepts of *becoming* and *machine* are explored by Deleuze and Guattari to reach the arguments on co-living that connect to critical posthuman thought. Braidotti's concept of *becoming-machine* is interpreted together with Haraway's and Grosz's contemporary arguments on becoming and co-living. In this scope, the research has reached the concepts on metastability and performativity in relation to posthuman experiences of co-living. These concepts are associated with the examples from the contemporary performance artworks. The performances of Schweder & Shelley, Gómez-Egaña and McRae are analyzed focusing on the experience that includes the posthuman possibilities for domesticity as a result of this research, aiming to rethink the relations between human and non-human in domestic space.

Keywords: Becoming-machine, Domestic space, Metastability, Posthuman, Performance

Extended Abstract

Introduction: As space is a phenomenon in relation to perception and experience, domestic space is a place for encounters and co-living of these experiences. In contemporary daily life, these experiences of co-living are not only for humans but also include non-humans. In critical posthuman thought, this mutual life of human and non-human is one of the crucial concepts as it proposes a post-dualistic understanding rather than Cartesian dualisms such as self/other, nature/culture, human/animal, and human/machine. Grounded on her notion of *cyborg* as the rejection of distinctions between organic and inorganic, Haraway (2016: 160) proposes "practices of making kin" from other species to reinvent the forms of co-living with her concept *becoming-with.* This post-dualistic understanding of living is rooted in the *becoming* notion of Deleuze and Guattari. In their philosophy, becoming is a concept about constant change, as opposed to being which is more related to stability and the machine is a description of life as a synthesis of machines, especially with the body and a metaphor different from mechanism. Posthuman theorist Braidotti (2013) develops their notions of becoming and machine by proposing a posthuman *becoming-machine,* as "a relationship to technology that is not based on functionalism". *Becoming-machine* expresses the relational powers of a posthuman subject that cannot grasp through the bonds with multiple others through technology. Braidotti mentions one of the main characteristics of becoming-machine as metastability, in relation to individuation. In this relation, metastability is an equilibrium in the direct connectivity of becoming revealing a flowing scale of variability and *becoming-machine* includes the mutual activities and interactions in-between the actors of this process, which leads to the concept of *performativity.* Although it is mostly associated with Butler's gender theory, Grosz also interpreted performativity through space in parallel to critical posthuman thought. For Grosz, performativity refers to interconnectivity and responsive multifaceted possibilities of action in-between. She proposes a space in-between for the posthuman performative possibilities of the domestic space which is more than the combination of humans, space, and technology.

Purpose and scope: The purpose of this study is to discuss the posthuman notion of becoming-machine through theoretical debates in relation to performance art. It is observed that domestic space is mostly studied in social sciences and architecture, and there are also researches in relation to posthuman subjects, which are usually in the scope of

technological advances. But there is a small number of studies on posthuman domestic space in the context of performance art. The scope of this study frames a critical perspective depending on the posthuman arguments of Haraway and Braidotti. It focuses on the notion of becoming-machine with the concepts of metastability and performativity. Through the interpretation of these concepts the selected performative artworks are analyzed for the posthuman possibilities of domestic space. Thus, with the results of these works, this study aims to present alternative perspectives and contribute to the literature on space discussions.

Method: This study employed a qualitative phenomenological research methodology to examine the notions of domesticity, spatiality, and performativity. As phenomenological research focuses on experience, these three notions also intersect with experience. This research is constructed on an interdisciplinary literature review and at first, domesticity is investigated in relation to the principal spatial theories of Heidegger, Bachelard, Schulz and Colomina on the concept of dwelling, to reach a more contemporary phenomenon of domestic space. Then, the experiential dimensions of domestic space are explored by the concept of co-living with *becoming* and *machine* notions of Deleuze and Guattari, and *becoming-machine* comes to the fore as an intersection of these notions within the posthuman studies of Haraway and Braidotti. In relation to these notions, the concepts of metastability and performativity are investigated by Simondon, Butler and Grosz, as the key concepts that are associated with all these debates for posthuman domestic space. As the results in the light of this interdisciplinary literature research, performance artworks by Schweder + Shelley, Gómez-Egaña and McRae are analyzed and discussed in the focus of *experience* for unveiling the posthuman possibilities of the domestic space in contemporary performance art.

Findings and conclusion: The discussion on domestic space is a matter of awareness on co-living what posthuman thinking also criticizes for rethinking our daily practices. The performative artworks examined in this research are examples of posthuman domestic experiences as they suggest alternatives for post-dualistic ways of co-living instead of living with Cartesian dualisms like human/machine and human/animal. These domestic spaces exceed the dualistic borders and come out with posthuman potentials. These performative experiences also discuss the possibilities of posthuman dwelling in the domestic space. In this context, the co-living inhabitants of domestic space interact for becoming-other as well as the space is becoming-machine. In Scheweder + Shelley's installations; audience, artists, space are in a symbiotic performative co-living, independent of being furniture or machine. Similarly in Gómez-Egaña's installation, the performers and the construction create a mutual domesticity that can no longer be defined only as organic or mechanical. In McRae's works, there is a symbiosis of different scale in-between the bodies and products, as the bodies push their limits for an experience of non-human embracement. Additionally, the machine in these spaces is not just a passive tool as in anthropocentric spatiality because the machine and the organism perform together. Likewise, Schweder + Shelley's and McRae's machines are active participants in the space and break the divisions in-between the organic and the technological. Therefore, this is an attempt to destabilize the established relationships to unveil posthuman potentials of metastability and performativity. In conclusion, the domestic space as a becoming-machine in performance art is the space that emerges through the repetitive, fluid and live connections in-between the symbionts of the space, including the space itself.

Keywords: Becoming-machine, Domestic space, Metastability, Posthuman, Performance

INTRODUCTION

Space is a phenomenon whose boundaries are always open to discussion. The existence of space can change according to anyone who is an adult, child, or animal. Due to such perception of space, it can be dark, cold, uncanny and light, hot, safe at the same time. One may even claim that a space is non-existent because they do not see it. On the other hand, space exists as a volume that has precise dimensions and coordinates in Cartesian thought. This thought classifies such a versatility of perceptions as dualities, thus considering space to have non-relativistic properties. In phenomenology, space is formed by the experiences of different inhabitants; as Heidegger (1971: 141) argues, "do the houses in themselves hold any guarantee that dwelling occurs in them?". Similarly, Norberg-Schulz (1984: 7) writes that dwelling is "something more than having a roof over our head and a certain number of square meters". Dwelling is not only to identify a space for one's own but also to build up the process of being an individual within this domestic space. Because dwelling and domestic space become related to settlement, belonging and protection. On the other hand, domestic space has also been a scene of discrimination since ancient times. Depending on the social statuses in civilizations, domesticity was reshaped with space manifesting authority. Whether it is the palaces of a kingdom or a simple three-room home of a nuclear family, domesticity relates to power for most of the time; even call it a "battlefield" (Colomina, 2006: 296).

The domestic space is a place of encounters and it is a shared place of co-living, not always for a group of people. Humans usually share their homes with their animals for farming, and in urban life with their pets. As long as the human continues to live with other species, the notion of co-living transforms as a critical issue too. Because even now, these species are more than just organisms by including machines, robots and algorithms in the daily life of domestic space which blurs the established boundaries for humans and non-humans. Grounded on her notion of cyborg as the rejection of distinctions between organic and inorganic; Haraway (2016: 160) proposes "practices of making kin" from other species to reinvent the forms of co-living. For Haraway, these practices are about the will to connect people with species other than their own, such as animals, microbiomes, codes, machines, in the name of *becoming-with.* In critical posthuman thought, becoming is crucial as an alternative to dualistic understanding of anthropocentric ways of living. This posthuman criticism is rooted in the *becoming* philosophy of Deleuze and Guattari. For them, *becoming* is more than just a phase or process of reaching from one point to another. Becoming is a concept about constant change, as opposed to *being* which is more related to stability. Posthuman theorist Braidotti (2013) develops their notion of becoming by proposing a posthuman *becoming-machine,* leading to the performative and metastable possibilities of co-living.

Domesticity, Spatiality and The Domestic Space(s)

Domesticity is an interdisciplinary concept that transforms in relation to social changes. Before the Industrial Revolution, it was more related to the role of the woman in the house; as associated with interiors for daily routine of housekeeping and cooking while the man was associated with the outside for earning money. In time, it became a criticism of this relation, as "a whole set of ideas that developed in reaction to the division between work and home" (Heynen, 2005: 7). By the concept of *dwelling*, domesticity relates to spatiality as a phenomenon of domestic space. From this phenomenological perspective, spatiality is formed by the experiences of dwellers. In his text *Building, Dwelling, Thinking*, Heidegger (1971) argues that space is a phenomenon that continues, renews and is shaped by experience in the continuity of daily life, rather than a completed, finished product. For Norberg-Schulz (1984), dwelling is not just a domestic interior; it is a place to meet with others for a mutual life of common values. Bachelard (1994) also relates dwelling with the values as "a privileged entity… of the intimate values of inside space… to integrate all the special values in one fundamental value" and investigates the domestic space through phenomenology within the experiences of the body (Leach, 1997: 92). In the context of values, domestic space is also a subject of geography and anthropology. McDowell explores domesticity to understand common values in different geographies as "the meanings created by home are not permanent and may be rewritten over time" (Sarı, 2022: 21). Besides, in anthropology Douglas studied the symbolic layers of spaces in archeological sites: "Anthropological studies on symbolic interpretations of tribal spatial arrangements have become a source of inspiration for archaeologists, and so too have sociological studies of behavior in public and private space" (Cieraad, 2017: 48). More recently, domestic spaces are not seen as a threshold between public and private, as their boundaries become permeable. Colomina argues this permeability as an invasion from outside to the inside: "A refuge from the outside, from the city, from the public, now the public has invaded the interior; it is already inside… So the only form of defense is counterattack; the only form of domesticity is counter domesticity" (Colomina, 2007: 298).

As Colomina sees the domestic space as the arena of battle of the hierarchies, she also interprets this invasion using media technologies. For her, every space, regardless of interior or exterior, is invaded by cell-phones, e-mails, and screens, because of our dependence on communication technologies. With transforming habits, not only the close environment of the house like garden and street becomes domestic space, but also "the bedroom... into a new multimedia/office living room; the kitchen into an urban extension, because of home delivery services…; the living room in a space no longer uniquely defined, both public and privately; the bathroom… as a new extension of the office" (Enia & Martella, 2020). So, as Cieraad (2017: 50) noted "the plural of domestic spaces seems adequate than the singular" because borders of the domestic space are not strict as before and this flexibility requires an open-ended definition mentioning multiplicity of experiences instead of one true domestic space. Given the ongoing crises of the current world, domestic spaces are now "characterized by an increasing gap between… temporary dwellers, freelance workers, single parents

producing new forms of cohabiting, and… celebrated clichés of traditional family life" (Aureli & Tattara, 2015).

The Becomings of Co-living

As the places of different experiences, domestic spaces also seem like public spaces when these encounters operate as the intersections of distinct privacies. They are the spaces of co-living for parallel lines, transversal planes and tangential spheres in spinning temporalities, what Deleuze defines *becoming* as "orientations, entries and exits" (Deleuze & Parnet, 2007: 16). For Deleuze (1990: 3), becoming is a concept that destroys "common sense as the assignation of fixed identities" and the binary relationship between the self and the other by passing through the two, and does not establish integrity. Becoming is a nomadic state of being together, unlike progress or transformation. Due to being a space of actions, this space of becoming and being together operates as a "perspective simultaneously vibrates with that of others" (Dewsbury & Thrift, 2005: 105). Lorraine explores this space of becoming in the story of the whale Moby Dick and the captain Ahab: "In his becoming-other, he becomes many selves all of whom are connected only by the continuity of a line of becoming. His perceptions, affective responses and actions are no longer consolidated in terms of a self that remains the same over time with a specific location in a totalised space" (Lorraine, 2005: 169).

As Deleuzian becoming is more than a relation between two entities, it is a flow of direct connections in-between two or more singularities which constantly transform into merging multiplicities. Like in their wasp-orchid figuration, it is not an evolution because "if evolution includes any veritable becomings, it is in the domain of symbiosis that bring into play beings of totally different scales and kingdoms, with no but from which no wasp-orchid can ever descend" (Deleuze & Guattari, 1987: 238). Therefore, becoming operates independently of binaries such as self/other, human/animal; and even if the previously defined other is an animal, human, refugee or machine, becoming-other is the deconstruction of the notion of *other*.

In the means of being together and co-living, becoming emerges as a domain of symbiosis in posthuman studies too. This proposal of leaving dualisms for co-living develops in the posthuman notions of Haraway and Braidotti. Haraway suggests *becoming-with* as a posthuman concept of co-living for a symbiotic life. In *A Cyborg Manifesto,* Haraway (1991) suggests breaking the boundaries between the organic and inorganic for a post-gender revolution and manifests a world where everyone is a cyborg. This call for a new world is an alternative practice of living to the established patriarchy. It is also about building new sets of social values for a life more symbiotic, not colonialistic. In her more recent book *Staying with the Trouble*, Haraway (2016: 60) notes that symbiosis is "the heterogeneous webbed patterns and processes of situated and dynamic dilemmas and advantages for the symbionts". She suggests the term *symbiont* for the agents of this practice and draws attention to making new kins as an alternative to the continuous reproduction of organisms. For her, new kins should belong to a different species, race, or geography as opposed to pedigree. Because of the earth under an ecological crisis, humans need to stop positioning themselves as the center of the world for urgent solutions.

Braidotti improves Deleuze and Guattari's *becoming* in order to develop a posthuman discourse on co-living, too. Braidotti suggests three types of becoming as *becoming-earth, becoming-animal* and *becoming-machine.* In Deleuze and Guattari, *becoming-animal* is related to molar and molecular separation like their other concepts: "Becoming-animal is not colonizing an animal with human perceptions of its nature, but finding an escape route from the human. You do not become a barking molar dog, but by barking, if it is done with enough feeling, with enough necessity and composition, you emit a molecular dog" (Deleuze & Guattari, 1987: 275). Braidotti (2013: 67) reinterprets this notion for a trans-species solidarity "on the basis of our being environmentally based, that is to say embodied, embedded in symbiosis with other species". For Deleuze and Guattari, *Becoming-machine* is related to their emphasis on machine and production with *desiring machines, abstract machines, war machines* which are not opposites of organisms and are different from mechanisms because "a mechanism is a closed machine with a specific function. A machine, however, is nothing more than its connections" (Colebrook, 2002: 56). For them, machine is not a metaphor and describes life as a synthesis of machines, especially with the body:

> Everywhere it is machines—real ones, not figurative ones: machines driving other machines, machines being driven by other machines... An organ-machine is plugged into an energy-source-machine… The breast is a

> machine that produces milk... the mouth… an eating-machine, an anal machine, a talking-machine, or a breathing machine. (Deleuze & Guattari, 1983: 8)

Braidotti (2013: 66) develops their *becoming-machine* as removing "the division between humans and technological circuits, introducing bio-technologically mediated relations as foundational for the constitution of the subject". Braidotti's *becoming-machine* relates to becoming-with the technologically bio-mediated other, "meaning a playful and pleasure-prone relationship to technology that is not based on functionalism" (Braidotti, 2013: 91). The posthuman in the process of becoming-machine is a force that displaces the lines of distinction between structural differences and ontological categories such as organic and inorganic, born and manufactured, flesh and metal, electronic circuits and organic nervous systems. The process of becoming-machine expresses the relational powers of a posthuman subject that cannot be grasped by dualisms and has a privileged bond with multiple others through technology. Therefore, posthuman becoming-machine is a criticism of dualisms starting from human/machine for a post-dualistic understanding of co-living.

Metastability and Performativity for the Space In-Between

Braidotti evaluates posthuman *becoming-machine* as post-dualistic mutual connections of machines and organisms by utilizing the concept of *metastability* as a core element for their *becoming* in relation to individuation: "They entertain their own forms of alterity not only towards humans, but also among themselves, and aim to create metastability, which is the precondition of individuation" (Braidotti, 2013: 94).

For her, individuation is crucial because of its direct relation to the notion of individuality. In this relation, metastability is an equilibrium in the direct connectivity of becoming revealing a flowing scale of variability from very near unstable to very near stable. It does not have to operate as a static balance to save a position equal to its individuals or agents. Simondon discusses the connection of becoming and metastability in terms of individuality, too: "Becoming happens in phases, and that the individual has only a relative existence as an expression of one of these phases, presupposes the existence of a pre-individual state" (Hoel, 2018: 259). For Simondon, the process of individuality is never completed to be a one for it is just a phase in the continuing rebirth of being. Furthermore, this ongoing set of states is full of potential "because they belong to heterogeneous dimensions of being" and thus "the individuation is a process that sustains potentials by making them compatible" (Hoel, 2018: 260). Thus, Simondon's thoughts on metastability draw attention to the importance of process or action by focusing on the phases of individuation, which is more productive, rather than the individual itself.

The emphasis on the potential in Simondon's theory, letting the actions be mutually produced, leads to another notion: *performativity.* Performativity is mainly considered in relation to performance and a prominent issue in critical posthuman studies. Even by its prior relation to space, performance is full of potentials as mentioned above as well. In her book *Performance*, Diana Taylor (2016: 3-7) examines performance in terms of performance art and highlights its dimensions coming from being a live action art. Besides theoretical descriptions of performance, it is valuable to include the definitions by the performers:

> Carmelita Tropicana: "Performance is art that is fluid, messy, a hybrid, an art that liberates the performer and spectator."
>
> Guillermo Gómez-Peña: "For me performance art is a conceptual 'territory' with fluctuating weather and borders… open to nomads, migrants, hybrids, and outcasts."
>
> Elin Diamond: "a living practice in the moment of its activation. In this sense, performance can be understood as process—as enactment, exertion, intervention, and expenditure." (Taylor, 2016: 3-7)

These definitions not only highlight the importance of lived spatiality in performance with the selected words such as territory, borders, intervention, outcasts; but also reveal the performativity in the frame of metastable becoming by mentioning the fluid, hybrid, migrant, process.

Although Austin (1962) is the first to use the term "performative" to describe a sentence that is an action at the same time, the concept of performativity is mostly renowned for gender studies of Butler. For Butler (1993: 12), performativity cannot be excluded from a process that includes regular and limited repetition of norms, and this repetition cannot be realized by the subject: "Performativity is thus not a singular act, for it is always a reiteration of a norm or set of norms, and to the extent that it acquires an act-like status in the present, it

conceals or dissimulates the conventions of which it is a repetition". This repeatability indicates that performance is not a singular action but a continuous ritual with certain boundaries. For Butler, becoming performative of gender is not like dressing to be put on or off at will.

Elizabeth Grosz is another theorist exploring the space of becoming within the notions of performativity, metastability and individuation. Grosz emphasizes the process of metastable individuation as well, instead of an identity or substance which is in the central position of the domestic space in other spatial theories. She argues that individual identity can be transductive and self-exceeding with the potential of breaking its central ties. In addition, not only does she propose a space of becoming, she asks for a possibility of this new space: "What does it mean to reflect upon "a position, a relation, a place related to other places but with no place of its own: The position of the in-between?" The in-between is a strange space, not unlike the choric space that Plato" (Grosz, 2001: 90).

Similar to Taylor's definitions of performativity, Grosz questions space within performance. Mentioning the position and the relation in her comprehension of this space refers to the interconnectivity and responsive multifaceted possibilities of action in-between. Moreover, Grosz imagines this space in-between by means of *becoming-other* independent of Cartesian dualism of self/other, that belongs to no one, but to everyone at the same time. Therefore, this sense of becoming-other operates in direct relation to the becoming-machine notion of Braidotti as it carries the posthuman performative possibilities of the domestic space which is more than the combination of human, house and technology.

METHOD

This study employed a qualitative phenomenological research method on the notions of domesticity, spatiality and performativity. As the focus in phenomenological research is *experience*, these three notions intersect with experience too, "in which the researcher describes the lived experiences of individuals about a phenomenon" (Creswell, 2013: 50). By choosing phenomenology as a method, the experiential dimension of the domestic space as a phenomenon is examined because phenomenology allows examining subjective experiences in depth. French phenomenologist Merleau-Ponty (2012) does not see domestic space as an abstract, empty space that is only lived in; according to him, it is a place where people live together, change, where emotions are reflected, but also change, a place where mutual interaction occurs. With an interdisciplinary literature review, domesticity is first investigated in relation to the principal spatial theories of Heidegger, Bachelard, Schulz and Colomina on the concept of dwelling, to reach a more contemporary phenomenon of domestic space. Then, the experiential dimensions of domestic space are explored as a matter of co-living through the becoming philosophy of Deleuze and Guattari among their emphasis on machine and *becoming-machine* comes to the fore as an intersection within the posthuman studies of Haraway and Braidotti. At the intersection of these notions, the concepts of metastability and performativity are investigated by Simondon, Butler and Grosz, as the key concepts that associate all these debates for posthuman domestic space. As the results in the light of this interdisciplinary literature research, performance artworks by Schweder + Shelley, Gómez-Egaña and McRae are analyzed and discussed in the focus of *experience* for unveiling the posthuman possibilities of the domestic space in contemporary performance art.

FINDINGS AND RESULTS

Posthuman Performative Possibilities of the Domestic Space

"Stability" and "ReActor" by Schweder + Shelley

Schweder + Shelley is an artist duo founded by Alex Schweder and Ward Shelley. They have performed in five installations which they define as *performance architecture* since 2007. Their installations are the life size structures for experiential co-living during their long durational performances. The equilibrium in-between them and the space is the main motive reiterated in these works.

Stability, exhibited in 2009, is their first installation which is a static wooden box truss suspended from the ceiling with the chains. The box is a living space with a kitchen and bathroom at the center. During the performance, each artist mostly spends their time at one end of the space. However, when they attempt to leave their location, the box starts to become unstable: "their moves, no matter how minor, created instability, with the structure tilting like a balance beam" (Kline: 2017: 7). Thus, they have to move together in synchrony if any of them needs eating or going to the toilet. If they do not act this way, the installation leans up to an angle of almost 15 degrees. Their other work, *In Orbit*, again functions like *Stability*, but it is not a box this time, it is a life size scaled wheel-like structure with furniture installed where one artist lives in the circle and the other one on the outer line of the circle. But *unlike* Stability's little tilt angle, any minor movement in this circle leads to a major balance shift.

Figure 1. Schweder + Shelley, *ReActor*, 2018

The duo's latest performative installation is entitled ReActor that resembles *Stability* with its prismatic form and concept of equilibrium, but this time this prismatic space is a house rotation 360 degrees on a single column at the center. The installation is a large glass and steel structure with the dimension appx. 13.5x2.5x3 m and 4.5 m of a concrete column. Similarly, the kitchen and bathroom are again at the center of the box and each artist spends their time on one side of the space. They have to move in collaboration at any time because what they perform is not an act of a script; they manifest a mutually dependent co-living. These performances are an alternative experience of stability both theoretically and practically. In relation to Haraway's notion of *becoming-with*, the artists become more than two entities at the opposite corners for a symbiotic domestic experience. They become symbionts not only as two people, but also with the machine that they live in. So, this symbiosis is not an experience lacking stability, but a post-dualistic stability including organic and inorganic both visualizing a posthuman metastability of becoming-machine.

"Domain of Things" by Pedro Gómez-Egaña

Gómez-Egaña's large-scale installation, Domain of Things, is a structure of steel construction with domestic furniture on top and performers underneath. In this installation, the artists positioned horizontally on the steel construction, move fragmented pieces of floor on top of the structure, with their hands and feet on the rails. As the floor moves, the furniture mounted on these floors, such as the sofa, the bed, and the bath tank, also move. In contrast to the speed and fluidity of well-running machines, these pieces move random and not so stable, giving the feeling of a fragile machine: "Like a machine, tacitly and slowly, these live performers set the construction into motion… Why did these people go underground? To seek shelter from the instability in the world above, or are they part of the very mechanism causing the instability?" (Gómez-Egaña, 2017).

Figure 2. Pedro Gómez-Egaña, *Domain of Things*, 2017

Similar to Schweder + Shelley 's dystopian inspiration, this work resembles people living underground due to disaster, war or freedom. For the artist, underground is a multifaceted concept open to both psychoanalytic and political readings in the context of the domination practices of governments, "where the upstairs has order and representational qualities, its *machinic* vision"; the work is a commentary on how people deal with the issues of technology in the domestic space. In this context, the artist discusses "technology as a force aiding the individualism of expression on the one hand, and as a medium manifesting a desire for connection on the other" (Larios, 2017: 207). Through a post-dualistic metastability; mechanism, performers, furniture and interior space become symbionts of a performative co-living as well. To continue this co-living experience, they have to be in a live negotiation to redefine this synchronicity independent of being only a furniture, a person or a mechanism. They create a mutual domesticity that can no longer be defined only as organic or inorganic. Because, as the construction gets into motion by the force of performers, the floor slides every time with a different combination of movements and their actions affect each other due to their random collectivity. So, this performance manifests a space of in-between like in Grosz's questions above, a space of becoming-other of co-living as well as becoming-machine experience of domestic space.

"Compression Carpet" and "Heavy Duty Love" by Lucy McRae

Lucy McRae is an artist who refers to herself as a body architect, focusing on the performative speculations about the life of the present and the future. In her works, machines are integrated in everyday life in unusual ways. *Compression Carpet*, exhibited in 2019, is a performative installation where anyone can experience a possible hugging-like action of a machine. This machine is different from the images that come to mind at first glance because it does not look like a cold machine. It is a set of soft, human-sized leather pillows that transform into a container to cover the entire body for cuddling. The installation bends inwards with the help of a rotating arm. The work has different versions with inflatable pillows where people can adjust the intensity of the embrace with a button.

Figure 3. Lucy McRae, *Compression Carpet*, 2019

McRae's other work in 2021 shares the same approach with the Compression Carpet. This time, she improves the experience of hugging a machine with the question of embracement in the future: "Heavy Duty Love questions whether these future sensitive humans will find new ways for intimacy and togetherness" (Frearson, 2021). She envisions the next-generation who will be born in artificial wombs and bypass the organic mother womb. Thus, her work discusses the need for an intimacy of a living that is constructed with a less human touch or connection. McRae defines these performative works as machine-wearables, which are mini architectures performed by two squeezed and two operator people: "Large furniture-like cushions made from tarpaulin, carpet underlay and industrial velcro, surround the body's perimetre - lean against the machine and you're ready to be squeezed" (McRae, 2021). There is a symbiotic experience on different scales for a space of in-between the bodies and products in McRae's works, too. Because the squeezing performance of mini architectures is sensitive to the forms of the bodies that it covers as the bodies push their limits for an experience of non-human embracement while they are indeed squeezed. This collective performativity breaks the established dualistic prejudices between machine and body, for one is cold or unfamiliar and the other is warm or familiar. Thus, McRae's works contribute to the arguments of Grosz's on metastable performativity concerning individual identities can be transductive and self-exceeding with the potential of breaking their central ties in unexpected posthuman possibilities of domestic experiences.

CONCLUSION

This research analyzed performative artworks as examples of posthuman domestic experiences by their post-dualistic potentials. Because they suggest alternatives for co-living other than dualism. No matter if it is for ten days or seconds, each artwork manifests a genuine co-living experience of an alternative domesticity. They are participatory works that welcome visitors to live this domestic experience. Through collective experience, artists and visitors live there for a while and intervene in Cartesian artspace by breaking the dualisms like artist/audience and public/private. They eat and take baths, even hug and sleep there. Therefore, domestic space exceeds the dualistic borders and comes out with posthuman potentials.

The common characteristic of these works is their relation to metastability as a becoming-machine. As domestic space is perceived as an essence helping to build an identity, symbiotic co-living also blurs this identification in a posthuman sense. In these artworks, the hierarchy between the co-living entities is deconstructed with the help of posthuman performativity. There is no hierarchical superiority of the human over the machine. This machine is not just a passive tool for human benefit because the machine and the organism perform together to be able to have a mutual co-existence in the same space, like in Gómez-Egaña's *Domain of Things.* Likewise, Schweder + Shelley's and McRae's machines are active participants of the space and break the divisions in-between the organic and the technological in the process of building a notion of

equivalent identity. So, this is an attempt to destabilize the established relationships to unveil the posthuman potentials. Exceeding the thoughts like Bachelard's that "constitutes a body of images that give mankind proofs or illusions of stability", there emerges an alternative experience of stability which is *metastability* (Winton, 2013: 48). Again, in the installation of Gómez-Egaña, there is more than an argument on the alienation of the human in mechanical processes. This work argues for the machine itself in the Deleuzian sense, which is not just a mechanical composition. It is a becoming process that is a sensible system of differences open to the limits wandering from the near of destabilization to the near of stabilization. Thanks to this sensibility, *Domain of Things* becomes a manifestation of an alternative of posthuman metastability which also unveils an existence of a fragile machine domesticity. McRae's works also speculate on the stabilities in the domestic space as well. In the co-living experience of machines and organisms, McRae explores the fragility of the machine too. She questions the attached points of views of dualistic thinking on the technology about its insensibility. Different from Scheweder + Shelley and Gómez-Egaña, McRae interprets posthuman metastability in a more minor scale both in terms of dimensions and senses. Her works speculate on the experiences like hugging and touching that are mostly identified with organisms to rethink the transductive and mutual performative space in-between people and machines. In parallel to Bachelard's phenomenology on space, McRae investigates the domestic space of becoming-machine by looking closer to its components from a posthuman magnifier.

On the other hand, these performative experiences discuss the possibilities of posthuman dwelling in the domestic space. As Norberg-Schulz (1984: 7) mentioned, dwelling "means to meet others for exchange of products, ideas and feelings… to come to an agreement with others, that is, to accept a set of common values. In these artworks, dwelling emerges as an argument on the concept of other. It is no longer a belonging of a specified inhabitant; it is performativity of shared practices forming with changeable common values. In parallel to The Arcades Project, the seminal book of Benjamin, it becomes "an active form of interaction between the inhabitant and his environment in which the individual and his surroundings adjust to each other" (Heynen, 2005: 21). In this context, the co-living entities of the space become the equivalent agents of the space under the name of *symbiont,* again. So, these values are formed by the performances of the symbionts of this posthuman domestic space and are always open to reinterpretations of any of them. Through their symbiotic experiences, symbionts continue their co-living practices in varying combinations of reiterations similar to Butler's arguments above, which also manifests posthuman performativity in the domestic space. These performances visualize the transformation of the dwelling as a becoming-machine with a posthuman metastability. Within this metastability, the things that are part of the dwelling become the other independent of being a product, idea or feeling like in Schulz's sentences. The more they become other, they unveil a posthuman experience of being equivalent and symbiotic agents of space, including the domestic space itself. Similarly, like in Benjamin's emphasis on interaction above, they redefine a posthuman dwelling which is more than a passive and one-directional spatiality in the borders of Cartesian dualisms or familiar experiences. With their constant changing of becoming, they propose a dwelling that is open-ended and in-between including the machines as mini-architectures and hugging alliances. So, different from the old understanding of dwelling, there are no discriminations depending on power or active/passive relations. In posthuman dwelling, the habitual memorizations of domesticity concerning the pre-assigned functions to the interior spaces of the house changes too, as a machine can cook by interpreting food data it has collected outside the kitchen or a person can sleep in a capsule or with a machine outside the bedroom.

At the intersections of becoming, metastability and performativity; the domestic space emerges through the repetitive, fluid and live connections in-between the symbionts of the space, including the space itself; "an amplifying coupling of technics and life - a mediation across disparate dimensions that releases new potentials" (Hoel, 2018: 261). This space of becoming-machine breaks the social statuses of domesticity coming from the ancient times including many dualisms like machine/organism and human/animal as the reinvention shift of posthuman practice. Therefore, posthuman domestic space as a becoming-machine is a possibility of experiencing "space and time as fragmented, transformable, interpenetrated, beyond any fixed formulation" (Grosz, 2001: 93). So, such a domestic space that blurs the established borders of perception of space starting from its inhabitants can be an example for further practical and theoretical studies on the notion of space. Moreover, it can also unveil a manifestation of an interdisciplinary model for understanding and interpreting the notions concerning posthuman performativity in the context of experience, in relation to ongoing academic debates on the possible positions of the human of anthropocene.

Authors' Contributions

The author contributed 100% to the study.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

This study does not require ethics committee approval.

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Figure References

Figure 1: Schweder, A. (2018). *ReActor, Schweder + Shelley Collaboration, 2016.* Alex Schweder http://www.alexschweder.com/reactor/ (08.02.2024).

Figure 2: Dall, R. (2018). Time and time again - interview with Pedro Gómez-Egaña. *Metropolis M, 4,* 2-6. https://www.metropolism.com/en/features/35324_pedro_g_mez_ega_a_interview (08.02.2024).

Figure 3: McRae, L. (2021). *Heavy Duty Love for Future Sensitive Humans, 2021.* Lucy McRae https://www.lucymcrae.net/cares (08.02.2024).

Author's Biography

Mustafa Kemal Yurttaş received B.Arch and 2003, M. Arch degrees from ITU Faculty of Architecture. 2019, received Proficiency in Art degree from YTU Art & Design. Besides, took part in personal and group exhibitions in the field of contemporary art and performed in museums such as Pera Museum, Museum Evliyagil, Berlin and Hong Kong. Yurttaş has been working full-time in Haliç University, running Project Studios and selective courses on art and design theory since 2020 and continuing participating in exhibitions, workshops and performances. In 2021, participated in the residency program at SVA New York with American Turkish Society's Artist Award.

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Research Article

Tarihî yapıların yeniden kullanımı kapsamında işlev değişikliğinin değerlendirilmesi: Tarihî Bitlis Belediye Binası örneği

Evaluation of functional change in the scope of reuse of historical buildings: The example of Historical Bitlis Town Hall

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Özet
Çağın zamanla değişen ihtiyaçlarına karşı yetersiz kalarak işlevsiz hale gelen tarihî yapılar, koruma yöntemleri kapsamında yeniden işlevlendirilerek yaşatılmaktadır. Bu araştırmanın amacı, tarihî kimliği ve yerel mimari özellikleri ile önemli bir değere sahip olan Tarihî Bitlis Belediye Binası'nın doğru işlevle yeniden değerlendirilmesine geleceğe aktarılabilmesine katkı sunmaktır. Yapının, Su ve Otobüs İşletmesi, Sanat Merkezi, Zabıta ve Trafik Amirliği olmak üzere kısa zaman aralıklarıyla farklı amaçlarda kullanıldığı; son durumunda ise Tarihî Bitlis Büryan Salonu adı verilerek özgün kimliğine uzak bir işlevlendirme yapıldığı tespit edilmiştir. Bu doğrultuda ulusal ve uluslararası düzeyde koruma kriterleri çerçevesinde arşiv taraması yapılarak ve yapıya dair katılımcı gözlem yöntemi kullanılarak işlev değişiklikleri kronolojik bir sıralamayla irdelenmiştir. Elde edilen bulgular için nitel araştırma yöntemleri doğrultusunda betimsel analiz yapılmıştır. Sonuç olarak; işlevlendirme sürecinde tarihî mimari dokunun ve kentsel bellekte yarattığı anlamın yitirilmeden yaşatılabilmesi için işlev seçiminde saygılı ve uyumlu bir yaklaşım benimsenmesinin önemi açığa çıkarılmıştır.

Anahtar Kelimeler: Tarihî Bitlis Belediye Binası, Yeniden işlevlendirme, Tarihî yapı

Abstract
Historical buildings, which have become dysfunctional over time as they are inadequate to meet the changing needs of the age, are kept alive by re-functioning within the scope of conservation methods. The research aims to contribute to re-evaluating the Historical Bitlis Town Hall which has an important value with its historical identity and local architectural features, and its transfer to the future. The building was used for different purposes in short periods, including Water and Bus Management, Art Center, Police and Traffic Directorate. In its last state, it was determined that it was named Historical Bitlis Büryan Hall and was re-functioned far from its original identity. In this regard, the functional changes were examined chronologically by scanning the archives within the framework of national and international conservation criteria and using the participant observation method of the structure. Descriptive analysis was conducted to find in line with qualitative research methods. In conclusion, during the functionalization process, the importance of adopting a respectful and harmonious approach in function selection has been revealed in order to keep the historical architectural texture and the meaning it creates in urban memory alive without losing it.

Keywords: Historical Bitlis Town Hall, Refunction, Historical building

Extended Abstract

Introduction: Historical buildings, which are a part of the cultural environment of the society, are produced with the effect of the social, political, economic and geographical conditions of the period in which they were built. Revealing and transferring the historical, cultural and scientific facts witnessed by the building to the future depends on the preservation of its spatial memory. The preservation of spatial memory can be ensured to the extent that the structure maintains its physical existence in its most original form. However, while its physical existence continues, buildings that are spatially

inadequate to meet the needs of the age cannot adapt to the developing technology structurally and cannot integrate with environmental changes, losing their original functions. According to Piero Gazzola, one of the famous Italian conservation experts, the preservation of structures that do not serve the purpose of their construction after a while carries a cultural responsibility rather than a practical necessity (Ahunbay, 2009: 8). In the conservation approach, which aims to ensure the vitality of the historical texture, as long as the buildings can be integrated with contemporary life; The danger of dehumanization, deterioration and extinction will decrease at the same rate (Karakul, 2009: 51). In this case re-functioning, which is one of today's contemporary conservation methods, is a common practice in order to ensure the use of the historical environment for a social purpose and to keep it alive by taking care of new living standards.

Purpose and scope: Witnessed the social and political development of the society in which lived, Historical Bitlis Town Hall, which is a structure that has transferred the traditional architectural character of the geography it was built to the future, is a historical document. It is a historical building with both historical and aesthetic value with its construction technique, local materials and style belonging to the traditional urban texture of Bitlis. After consuming its original function, it is restored; it has undergone a few short-term changes in function, such as "Water and Bus Management, Art Center, Police and Traffic Supervision". Currently, the restaurant function, which was loaded with the name "Büryan Hall", continues. In terms of the quality and continuity of the protection applied to the building, although functionalization close to its original function are present, it is noteworthy that stability cannot be achieved in the usage process. In the last functional change, it is seen that the identity of the building has been moved away. This direction aims to evaluate the functional change process of the Historical Bitlis Town Hall. The extent to which the historical texture is preserved as a result of restoration and reuse practices has been examined. The relationship between functional change and structure identity in use is discussed in the context of respect for the historical structure and the continuity of the original texture in the urban memory.

Method: In order to evaluate the functional change process of the Historical Bitlis Town Hall, which was recorded as a study area, archives and documents were scanned within the framework of national and international conservation criteria. This potential was found in the drawings and reports of the construction project of the building from the archives of the Bitlis Municipality Zoning Directorate; Structural and functional changes were determined systematically over the years. In order to delete existing components where the structure has been restructured; Application observation methods, which are complementary components of other methods, have been used to reveal reality in qualified packages. During the method process, the researchers observed the time they spent over time and accordingly examined the historical value of the new function, its structure and its relationship with its environment. Some changes resulting from the historical information, photo archives and installed functions of the structure do not start directly during the dialogues with the users and the operator; the current situation is documented with photographs. The themes recorded for descriptive analysis were obtained by chronologically tabulating the stated options for the re-functionalization of historical buildings, the variety of flexible purposes, and structural constraints in international regulation.

Findings and conclusion: In the scope of the research; construction II. The functional change process of Historical Bitlis Town Hall, which is dated to the Abdülhamid Period and represents the traditional architectural texture of the city, has been evaluated. The historical building, which maintains its massive existence, has been continuously re-functionalized for different purposes after its original function. When the legal regulations and universal approaches related to refunctioning are examined; it was emphasized that the choice of a function parallel to the original function of the building is more appropriate in terms of preserving historical and architectural data. Considering the functional change processes in this direction, it was seen that the functions suitable for the original function of the building and the plan scheme could not be carried out for a long time. It is thought that the effect of social expectations in contemporary living conditions, physical and cultural built and natural environment data is ignored. Choosing a function that is sensitive to the architectural, aesthetic and cultural value of the historical building is one of the most important stages of the re-functioning process. In this context, when the current function of the building is evaluated, it is seen that it has moved away from its original function. In conclusion, the effect of spatial, structural and environmental data should be evaluated in the process of re-functioning a historical building. A conscious functioning with social and environmental awareness that is sensitive to the original texture and respectful of historical cultural values is also required. This study aims to create awareness of the re-functioning process of historical buildings. It is hoped that the functional transformation of the Historic Town Hall, which is an important value in the city memory of Bitlis, will be reconsidered, especially in the context of the criterion of "respect."

Keywords: Bitlis Old Town Hall, Refunction, Historical building

GİRİŞ

Toplumun içinde bulunduğu kültür ortamının bir parçası olan tarihî yapılar, inşa edildiği dönemin sosyal, siyasal, ekonomik ve coğrafi koşullarının etkisiyle üretilmektedir. Yapının tanıklık ettiği tarihî, kültürel ve bilimsel olguların açığa çıkarılarak geleceğe aktarılması, sahip olduğu mekânsal belleğin korunmasına bağlıdır. Mekânsal belleğin korunması, yapının fiziksel varlığını en özgün haliyle sürdürebildiği ölçüde sağlanabilir. Fakat fiziksel varlığı devam ederken mekânsal olarak çağın ihtiyaçlarını karşılamada yetersiz kalan, yapısal olarak gelişen teknolojiye uyum sağlayamayan ve çevresel değişimlerle bütünleşemeyen binalar ilk işlevlerini yitirmektedir. Ünlü İtalyan koruma uzmanlarından Piero Gazzola'ya göre; bir süre sonra yapılış amacına hizmet etmeyen yapıların korunması, pratik bir gereklilik olmaktan öte kültürel bir sorumluluk taşımaktadır (Gazzola, 1969'dan aktaran Ahunbay, 2009: 8). Çünkü koruma, bir bakıma toplumun geçmişini geleceğe bağlama çabası olarak; doğal ve kültürel çevrenin mevcut varlığını ve değerlerini devam ettirebilmesi için zamanla oluşan veya oluşabilecek bozulmaların önlenmesini gerekli kılmaktadır (Bahar & Açıcı, 2021: 67-68). Tarihî dokunun canlılığını sağlamayı amaçlayan koruma yaklaşımında, yapılar çağdaş yaşamla bütünleşebildikleri sürece; insansızlaşma, bozulma ve yok olma tehlikesi de aynı oranda azalacaktır (Karakul, 2009: 51). Bu durumda tarihî yapının korunması ile ilgili yapılan iyileştirmelerin kalıcı ve çağdaş bir çözümle sonuçlandırılması gerekmektedir. Günümüz çağdaş koruma yöntemlerinden biri olan yeniden işlevlendirme, yeni yaşam standartlarını gözeterek tarihî çevrenin toplumsal bir amaçla kullanımının sağlanması ve sürekli bakımının yapılarak yaşatılması adına yaygın bir uygulamadır.

Restorasyon yaklaşımına tarihî kimliğin ve belge niteliğinin mümkün olduğunca en özgün halinin korunması olarak bakan Kuban'a göre (1969: 342), eski bir esere yeni bir fonksiyon verme durumunda bile tarihî ve estetik değerden taviz verilmemelidir. Çünkü yeni fonksiyon yapının fiziksel varlığını kurtarmak için bir araçtır. Kuban, aynı zamanda korunmayı gerektiren koşulları belirlerken tarihî belge niteliğinin iki şekilde kazanıldığına dikkat çekmiştir. Bunlar:

1. Bir tarihî olayla bağlantılı olması,
2. Bir tarihî sürece belirten olması. (Kuban, 1969: 342)

Her iki tanımlamaya da uygun olarak içinde bulunduğu toplumun sosyal, siyasal gelişimine tanıklık etmiş; inşa edildiği coğrafyanın geleneksel mimari karakterini geleceğe aktarmış bir yapı olan Tarihî Bitlis Belediye Binası belge niteliği taşımaktadır. Yapı, II. Abdülhamid Dönemi'nde 1898 yılında inşa edilmiştir (Kolay, 2018: 141). Bitlis'in geleneksel kent dokusuna ait yapım tekniği, yerel malzemesi ve üslubuyla hem tarihî hem de estetik değere sahip bir yapıdır. Özgün işlevini tükettikten sonra restorasyonu yapılarak; Su ve Otobüs İşletmesi, Sanat Merkezi, Zabıta ve Trafik Amirliği olmak üzere kısa süreli birkaç işlev değişikliği geçirmiştir. Güncel durumunda ise Tarihî Bitlis Büryan Salonu adıyla yüklenen restoran işlevi devam etmektedir. Yapıya uygulanan korumanın niteliği ve sürekliliği açısından bakıldığında; aralarında özgün işlevine yakın işlevlendirmelerin de olmasına rağmen kullanım sürecinde istikrarın sağlanamaması dikkat çekmektedir. Son işlev değişikliğinde ise yapı kimliğinden uzaklaşıldığı görülmektedir. Bu doğrultuda çalışmada, Tarihî Bitlis Belediye Binası'nın işlevsel değişim sürecinin değerlendirilmesi amaçlanmıştır. Tarihî dokunun restorasyon ve yeniden kullanım uygulamaları sonucunda ne derece korunduğu irdelenmiştir. Kullanımı devam eden işlev değişikliği ve yapı kimliği arasındaki ilişki; tarihî yapıya saygı ve kentsel bellekteki özgün dokunun devamlılığı bağlamında tartışılmıştır.

YÖNTEM

Çalışma alanı olarak belirlenen Tarihî Bitlis Belediye Binası'nın işlevsel değişim sürecinin değerlendirilebilmesi için öncelikle ulusal ve uluslararası düzeydeki koruma kriterleri çerçevesinde arşiv ve doküman taraması yapılmıştır. Bu kapsamda Bitlis Belediyesi İmar Müdürlüğü'nün arşivinden yapıya ait restorasyon projesinin çizimlerine ve belgelerine ulaşılmış; yapısal ve işlevsel değişim yıllara göre sistematik bir şekilde tespit edilmiştir. Yapının yeniden işlevlendirilmiş olduğu mevcut durumunun irdelenebilmesi için ise; nitel araştırmalarda gerçekliğin ortaya çıkarılması amacıyla diğer yöntemleri tamamlayıcı nitelikte olan katılımcı gözlem yöntemi kullanılmıştır. Gözlem yöntemi "bir nesnenin, olayın veya gerçekliğin, niteliklerinin bilinmesi amacıyla dikkatli ve planlı olarak ele alınıp incelenmesi, müşahede edilmesi" olarak

tanımlanmaktadır (TDK, 2005: 795). Katılımcı gözlem ise araştırmacının doğrudan araştırma alanına dâhil olup içeriden gözlem yapabilmesini gerektiren ve o durumu tecrübe eden insanların ifadeleriyle atfettikleri anlamı derinlemesine irdelemeyi sağlayan gözlem tekniklerinden biridir (Güçlü, 2021: 162). Yöntem sürecinde araştırmacı yapının içerisinde zaman geçirerek yerinde gözlem yapmış ve bu doğrultuda yapının yeni işlevinin tarihî değeri, dokusu ve çevresiyle olan ilişkisini incelemiştir. Yapıya ait tarihî bilgiler, fotoğraf arşivleri ve yüklenen işlevden kaynaklı birtakım değişiklikler doğrudan kullanıcılar ve işletmeci ile olan diyaloglar esnasında not alınmış; güncel durum fotoğraflarla belgelenmiştir. Yapı-işlev ilişkisine dair elde edilen veriler için nitel araştırmaya dayalı betimsel analiz tekniği uygulanmıştır. Betimsel analiz, araştırmada bir takım veri toplama yöntemleri ile ulaşılan bulguların araştırmacı tarafından kavramsal veya gözlem sürecinde oluşturulan temalar çerçevesinde özetlenerek yorumlanması şeklinde yapılmaktadır (Özdemir, 2010: 336). Betimsel analiz için belirlenen temalar, tarihî yapıların yeniden işlevlendirilmesine dair uluslararası yasal düzenlemelerdeki öncelikli amaç ve yapısal müdahalenin sınırlarının belirtildiği maddelerin kronolojik olarak tablolaştırılmasıyla elde edilmiştir (Görsel 1).

Görsel 1. Araştırmada izlenen yöntemin diyagramı

Yeniden İşlevlendirmede Yasal Düzenlemeler ve Yaklaşımlar

Tarihî ve kültürel çevrenin korunmasına dair düzenlemeler 18. yüzyıldan başlayıp çağdaş restorasyon kuramlarıyla birlikte gelişerek günümüze kadar devam etmiştir. Birbirinden farklı bakış açılarına sahip koruma yaklaşımlarının ortak bir görüş altında toplanması fikri İtalyan Camillo Boito'nun girişimleri ve onun kuramını destekleyen Gustavo Giovannoni'nin katkısıyla uluslararası düzeye ulaşmıştır. Bu doğrultuda çağdaş koruma yaklaşımlarının bilimsel bir uzlaşıya dayandırılması için ilk olarak 1931 yılında Atina'da Tarihî Anıtların Korunması ile İlgili Mimar ve Teknisyenlerin 1. Uluslararası Konferansı toplanmıştır. Konferansta belirlenen ilkelere bakıldığı zaman, yapının sürekli bakımının yapılarak yaşatılmasındaki en önemli gerekliliklerden birinin işlevsel bir değer yüklenmesi ile bağlantılı olduğu görülmektedir. Buna göre; yapının tarihî ve estetik kimliğine saygılı bir amaca yönelik olması koşuluyla kullanılmaları önerilmiştir (Ahunbay, 2009: 18). Bu konferansın ardından İtalya'da 1932 yılında hazırlanan Carta Del Restauro (Restorasyon Tüzüğü) ile birlikte korumaya dair ilkeler daha ayrıntılı bir şekilde ortaya konulmuştur. Carta Del Restauro'nun 4. Maddesinde fiziksel olarak yaşamını sürdüren bir yapının özgün işlevinden çok fazla uzaklaşmayan ve gerekli düzenlemeler yapılırken ciddi hasarlara sebep olmayan yeni bir kullanımın kabul edilebilir olduğu ifade edilmiştir (Carta Del Restauro, 1932). Yapının özgün işlevi dışında farklı bir amaçla kullanıma açılmasının ön koşulu olarak yakın bir işlev seçiminin benimsenmesi aynı zamanda yapıdaki uyarlamaların oranını azaltarak tarihî değerin daha iyi korunmasını sağlamaktadır.

1964 yılında Venedik'te II. Uluslararası Tarihî Anıtlar, Mimar ve Teknisyenler Kongresi toplanarak daha önce belirlenen ilkelerin genişletildiği Venedik Tüzüğü kararları alınmıştır. 16 maddeden oluşan Venedik Tüzüğü'nün 5. Maddesinde anıtların korunmasının yararlı bir toplumsal amaç doğrultusunda kullanmakla kolaylaşacağı vurgulanmıştır. Fakat yeni işlevin gerektirdiği tasarımların kabul edilebilir olması için yapının plan ve bezemelerinde herhangi bir değişikliğe uğramaması gerekmektedir. Yalnızca bu sınırlar çerçevesinde yeni işlev için düzenlemelere izin verilebileceği belirtilmiştir (Venedik Tüzüğü, 1964).

Avrupa Mimarlık Mirası yılı olarak temsil edilen 1975 tarihinde mimari mirasın korunmasına yönelik Amsterdam'da kongre düzenlenmiştir. Kongrede kabul edilen, tarihî yapının kent planlamasına katılarak kullanılmasının kaynak tasarrufu açısından da önemli olduğunu vurgulayan Amsterdam Bildirgesi'nde; yapıların karakterlerine saygı göstermeyi ihmal etmeden çağdaş yaşam koşullarına uygun yeni işlevler verilmesini, yaşatılması için kalıcı bir çözüm olarak önermektedir (Amsterdam Bildirgesi, 1975).

Mimari mirasın evrensel bir kültürel çeşitlilik sağladığı ve korunmasının uluslararası düzeyde bir sorumluluk yüklediği gerekçesiyle 1999 yılında Meksika'da Venedik Tüzüğü'ne ek ilkeler olarak ICOMOS Geleneksel Mimari Miras Tüzüğü kabul edilmiştir. Uluslararası düzenlenen koruma yöntemlerini ve ilkelerini benimseyen Türkiye ise, daha önceden hazırlanmış sözleşmeleri ve ICOMOS tarafından düzenlenmiş belgeleri bütünsel bir yaklaşımla ele alarak ortak bir zemin oluşturmuştur. Bu bağlamda 2013 yılında ICOMOS Türkiye Mimari Mirası Koruma Bildirgesi yayınlanmıştır. Bildirgede, kültür varlığının yeni bir işlevle kullanılması için gerekli görülen müdahalelerin, restorasyon/koruma projesi kapsamında uygulanması ifade edilmiştir. 1999 tarihli ICOMOS Tüzüğü'nde olduğu gibi bu bildirgede de yapıların yeniden işlevlendirilmesinde; karakteri, biçimi, anlamı ve bütünlüğü saygı görecek şekilde ve toplumun etik kuralları çerçevesinde kabul edilebilir bir yaşam standardına yükseltilmelidir (ICOMOS Geleneksel Mimari Miras Tüzüğü, 1999; ICOMOS Türkiye Mimari Mirası Koruma Bildirgesi, 2013) (Tablo 1).

Tablo 1. Tarihî bir yapıyı koruma kapsamında yapılacak yeniden işlevlendirme uygulaması ile ilgili evrensel ölçütler

Tarihî Anıtların Korunması ile İlgili Mimar ve Teknisyenlerin 1. Uluslararası Konferansı	**Carta Del Restauro (Restorasyon Tüzüğü)**	**Venedik Tüzüğü**	**Amsterdam Bildirgesi**	**ICOMOS Geleneksel Mimari Miras Tüzüğü**	**ICOMOS Türkiye Mimari Mirası Koruma Bildirgesi**
1931	**1932**	**1964**	**1975**	**1999**	**2013**
Estetik ve tarihî kimliğe saygılı bir amaca sahip olmalı (Madde 1)	Özgün işlevinden çok fazla uzaklaşılmamalı, Yapıda ciddi hasara sebep olunmamalı (Madde 4)	Yararlı bir toplumsal amaca sahip olmalı, Yapının planı ve bezemeleri değiştirilmemeli (Madde 5)	Yapılara ve onların karakterine saygı gösterilmeli	Bütünlüğü, karakteri ve biçimi saygı görmeli	Özgünlüğü, bütünlüğü ve anlamı saygı görmeli

İşlevsel ömrünü tüketen tarihî bir binaya uygulanan yeniden işlevlendirme yoluyla, çağın dinamiği içerisinde yaşamını devam ettirebilmek için binaya aktif bir rol yüklenmektedir. Bunu adaptasyon *(uyarlama)* olarak açıklayan Douglas, yapının mevcut kapasitesi, işlevi veya performansında yapılan değişiklikler yani yeni koşul ve gereksinimlere uyacak şekilde bir binayı yeniden kullanmayı hedefleyen müdahaleler olduğunu ifade etmektedir (Douglas, 2006: 1). Tarihî ve kültürel değerin korunmasını ortak amaç edinen tüm yeniden işlevlendirme ilkeleri kapsamında, yapıya uygulanacak müdahalelerin sınırını en aza indirgeyen aşama işlev seçiminin doğru yapılmasıdır. İşlev seçimindeki ideal yöntem ise yapının özgün işleviyle yeniden kullanılması veya buna en yakın işlevin yüklenmesiyle kullanımın sürekli hale getirilmesidir (Yavaşcan, 2021: 4). Yapıya uygun işlev seçimi, uygulanacak uyarlamaların oranını azaltarak tarihî verilerin korunmasını sağladığı gibi kentsel bellekteki kültürel değerinin yok sayılmasını ve zedelenmesini de önlemektedir. Başgül ve İlerisoy (2021: 168), kültürel değerin korunmasını temel alan "en uygun işlevli yeniden kullanım" ile yalnızca yapının fiziksel özellikleriyle "uyumlu bir yeniden kullanımı" benimseyen iki farklı yaklaşım üzerinden tartışıldığını da ifade etmiştir. İlkinde yapının özgün kimliği ve kültürel açıdan önemi korunurken; ikinci yaklaşımda ise mevcut yapıya zarar vermeyen fakat kültürel değerini olumsuz etkileyen bir tavırla işlevlendirilmektedir. Evrensel boyutta belirlenen yeniden işlevlendirmeye dair ölçütlere bakıldığı zaman ise yapının özgün

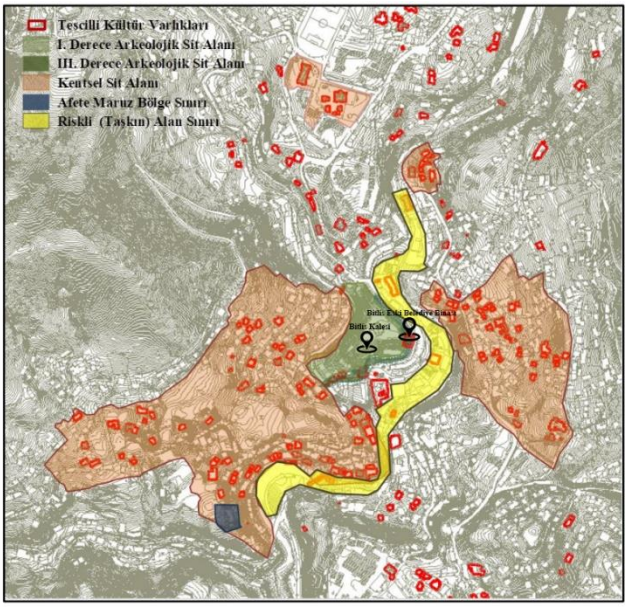
biçimine, kimliğine ve karakterine saygı gösterildiği sürece uyarlama yapılmasına izin verildiği görülmektedir. Yapıyı yalnızca fiziksel olarak geleceğe taşımanın ötesinde geçmişten gelenin anlamsal bütünlüğüyle bağ kurmak önemsenmektedir.

Yeniden işlevlendirmede müdahalenin sınırını belirleyen bir başka ilke ise geriye döndürülebilirliktir (Pehlivan, 2018: 541). Kuban'a göre (1969: 345); "tarihî, estetik ya da fonksiyonel olarak bütüne bağlı elemanların, yapıyı herhangi bir çağdaki duruma indirgemek amacıyla yok edilmeleri doğru değildir." Çünkü bu şekilde özgün tarihî doku ve değerler geleceğe değiştirilerek aktarılmış olur. Bu durumda yapının tekrar orijinal durumuna getirilmesi gerektiğinde ise geriye dönüş mümkün olmayacaktır. Yapının işlevlendirmeden kaynaklı müdahalelerin oranını azaltan noktalardan birini de plan şeması ile işlev arasındaki uyum oluşturmaktadır. Yeniden işlevlendirmeyi değişen çağın ihtiyaçlarını karşılamak ve toplumsal mirasın korunması adına bir gereklilik olarak gören Altınoluk (1998: 19-22); yapının mekânsal oluşumunu yeni işlevin seçiminde en önemli nokta hatta bir ön şart olarak ifade etmektedir. Çünkü yapıdaki mekânsal kurgu yeniden işlevlendirmeyi sınırlayan çerçeveyi ilk aşamada ortaya koymaktadır. Yeni işlev için gerekli mekânsal hacim ve kurgu, yapının mevcut şemasıyla örtüştüğü zaman yapısal müdahale ortadan kalkacak veya en aza indirgenmiş olacaktır. Bu bağlamda yeniden işlevlendirmede mevcut bütünlüğe bağlı kalınması için yapıyı işleve uyarlamak yerine işlevi yapıya uyarlamak gerekmektedir.

Tarihî yapıların yeniden işlevlendirilmesinde, yapının bulunduğu kent dokusuyla ilişkisi ve konumu gereği çevrenin de ihtiyaç ve beklentileri dikkate alınmalıdır (Biber & İslamoğlu, 2022: 35). Yeni işlevin sürdürülebilir olması bakımından ekonomik ve sosyal düzeyde yapının çevresel performansının değerlendirilmesi gerekmektedir. Özellikle yapının yapılı ve doğal çevre ile olan ilişkisi, tarihî çevre dokusu içerisindeki yeri ve erişilebilirliği gibi kriterler önemsenmelidir (Kutlu & Ergün, 2021: 182).

BULGULAR

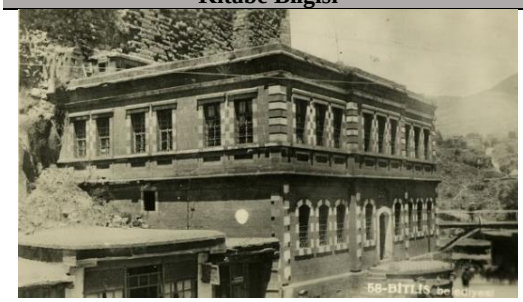
Araştırmanın çalışma alanı olarak seçilen Tarihî Bitlis Belediye Binası; Zeydan Mahallesi'nin Kazım Dirlik Caddesi üzerinde Bitlis Kalesi'nin doğu surlarına bitişik konumda yer alarak 3. derece arkeolojik sit alanına dâhil olan tescilli bir yapıdır (Görsel 2).



Görsel 2. Tarihî Bitlis Belediye Binası'nın sit alanı içerisindeki konumu

Binanın inşası ile ilgili bilgilere giriş kapısı üzerinde bulunan kitabesinden ulaşılmıştır. Kitabeye göre II. Abdülhamid Dönemi'ne tarihlenen bina, Vali Ömer Bey tarafından 1898 yılında inşa ettirilmiştir. Kitabede yazılan ifadeler doğrultusunda oluşturulan yapı kimliği bilgileri aşağıda belirtilmiştir (Tablo 2).

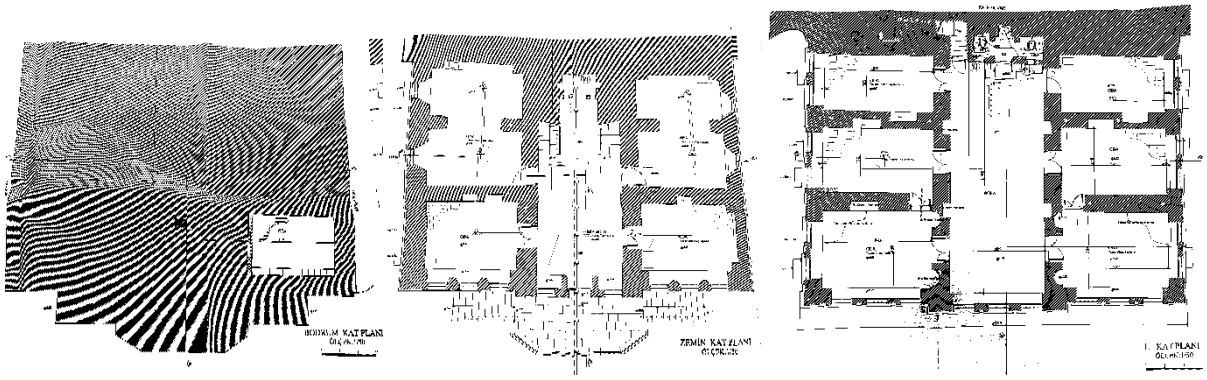
Tablo 2. Tarihî Bitlis Belediye Binası kimlik bilgileri

Kitabe Bilgisi	**Yapının Kimliği**	
	Yapının Adı	Tarihî Bitlis Belediye Binası
	Yapım Yılı	1898
	Yapı Türü	Kamu Binası
Hazreti Sultan Hamid-i Han terakki perverin Feyz-i lütfu ihya eyledi bu mülk-ü devleti Saye-i şahanede ikmal edildi bu bina Verdi ziynet beldeye tarz-ı cedid-ü heybeti Burca fethe çıktı bir mısrada tarih-i tam Oldu inşaya sebeb Vali Ömer Bey himmeti Rebiülevvel Sene 1315 hicri (1898 miladi) (Kolay, 2018: 141; Toptaş, 2022: 246).	Mimari Dönemi	Geç Osmanlı Dönemi (II. Abdülhamid Dönemi)
	Mimari Üslup	Tanzimat Dönemi Neoklasik Üslup
	Tescil Durumu	DKTVKK 01.12.1989 tarih ve 317 sayılı karar
	Yapının Konumu	Zeydan Mahallesi, Kazım Dirlik Caddesi, Bitlis/ Merkez

Tarihî bina, plan tipolojisi olarak hem dönemin belediye binaları ile benzer nitelikte hem de Bitlis'in geleneksel mimari dokusuna uygun yerel malzeme ve tekniklerle inşa edilmiştir. Yapının inşasında geleneksel Bitlis küfeki taşı ve bağlayıcı malzeme olarak da odun külü katkılı kireç harcı kullanılmıştır. Taş malzemenin etkisiyle duvar kalınlığı zemin katta yaklaşık 130 cm, üst katta ise 90 cm'i bulmaktadır (Işık vd., 2016: 60). Kare formuna yakın simetrik bir plana sahip olan yapı, iki katlı ve düz toprak damlıdır. Yapının doğu kanadında bulunan giriş cephesi; çift kollu, on basamaklı taş bir merdivenle tanımlanmıştır. Cepheyi simetrik olarak ikiye bölen merdiven kollarının bağlandığı giriş sahanlığının ön cephesinde basık kemerli bir niş içerisine çeşme yapılmıştır. Giriş kapısı ile birlikte yapının zemin kat pencereleri basık kemerli, üst katlar ise dikdörtgen formlu düz atkılı sövelerle vurgulanmıştır. Cephedeki dinamik etkiyi yaratan bir diğer yapı elemanları köşe taşları ve dikdörtgen çerçeveli kabartmalı kat silmeleridir (Görsel 3).

Görsel 3. Tarihî Bitlis Belediye Binası'nın giriş cephesi

Yapının bodrum katında yalnızca kuzeydoğu aksında bir oda bulunmaktadır. Zemin kat planı, giriş kapısıyla birlikte simetrik olarak ikiye ayrılan kuzey ve güney kanadındaki ikişer oda ve orta sofadan oluşmaktadır. Orta sofa, giriş aksı üzerinde bulunan üç kollu bir merdivenle sonlanmaktadır. Aynı şekilde birinci kat planı da orta sofanın ayırdığı her iki kanatta simetrik olarak dizilmiş üçer oda ve ıslak hacim birimlerinden oluşmaktadır. Bu kattaki doğu cephesine bakan odalar ve orta akstaki odalar aralarında geçişi sağlayan kapılarla birbirine bağlanmıştır (Görsel 4).



Görsel 4. Tarihî Bitlis Belediye Binası'nın restorasyon projesine ait kat planları

Yapının iç mekânında da Bitlis'e özgü mimari doku ön plana çıkmaktadır. Zemin kattaki orta sofa ve batı cephesine dayalı her iki odanın tavanı taş strüktürlü beşik tonozlar ile taşınmaktadır. Zeminin doğu cephesindeki odalar ile birinci katın tavanlarında ise yerel mimari malzemelerden biri olan ve "keran" diye adlandırılan yatay sıralı ahşap taşıyıcı kiriş sistemi kullanılmıştır. Yapının iç duvarlarındaki ahşap doğramalı nişler, pencere önünde sekiler, kemerli eşikler ve taş bezemeler geleneksel mimari dokuyu yansıtan karakteristik detaylardır. Yapının batı cephesine açılan ve çatıya ulaşmak için kullanılan bir kapısı daha bulunmaktadır. Islak hacimlerin yanında konumlanan kapı, aynı zamanda kalenin surlarına doğru ilerleyen basamaklı bir geçişe açılmaktadır. Bu yolun daha önceki yıllarda kalenin yamacında inşa edilmiş ve günümüzde yıkılmış bir başka tarihî yapı olan eski cezaevine doğru ilerlediği söylenilmektedir. Güney penceresinden bakıldığında basamaklı geçiş yolu hala görülebilmektedir (Görsel 5).

Görsel 5. Yapıdaki geleneksel mimari dokuyu yansıtan detaylar

Yapının kuzey ve güney cephesine bitişik olarak inşa edilen kaçak binalardan dolayı özgün dokuların büyük bir kısmı kapatılmıştır. Bu şekilde güney cephesinin zemin katı, kuzey cephesinin ise tamamı kaybolmuştur. Bu konuyu destekleyen ayrıntılı bilgi ve görsellere araştırmanın "Tarihî Bitlis Belediye Binasının İşlevsel Değişim Süreci" başlıklı bulgular kısmında yer verilmiştir.

Tarihî Bitlis Belediye Binası'nın İşlevsel Değişim Süreci

Tarihî Bitlis Belediye Binası olarak anılan tarihî yapı, inşa edildiği tarihten 1998 yılına kadar özgün işlevini korumuştur. Daha sonraki tarihlerde yeniden işlevlendirilen yapı, Bitlis Belediyesi Su ve Otobüs İşletmesi adıyla belediyenin ek hizmet binası olarak özgün işlevine yakın bir amaç için kullanılmıştır. Bu süreçte iç mekândaki özgün dokunun çeşitli müdahalelerle kapatıldığı 2011 yılında yapının mevcut durumunu aktaran bir çalışmadan gözlenmiştir. VII. Uluslararası Vangölü Havzası Sempozyumu'nda sunulan *Tarihî Bitlis Belediye Binası* adlı çalışmadaki görsellere göre; yapının duvarlarındaki ve zemin katın tonoz tavanlarındaki özgün taş doku sıvanarak boyanması sonucu kapatılmıştır. Zemin kaplamalarının ise beton ve mozaik ile

döşendiği; taş malzemeden yapılmış üç kollu merdivenin de betonarmeye dönüştürülerek boyandığı görülmektedir (Öztürk & Tökmeci, 2011'den aktaran Süphanoğlu & Başok, 2021: 268) (Görsel 6).

Görsel 6. Tarihî Bitlis Belediye Binası'nın restorasyon yapılmadan önce iç mekânından görseller

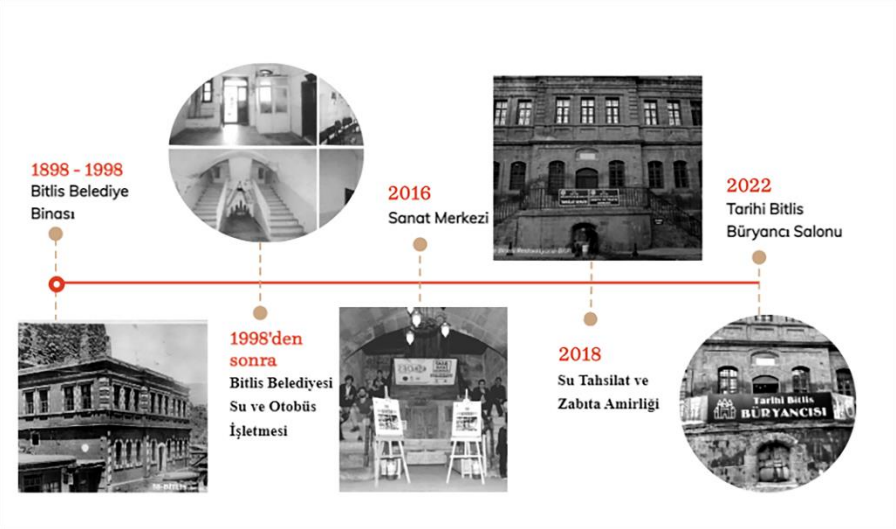
Zamanla yapıya eklemlenen kaçak yapılar, kuzey ve güney cephelerdeki mimari dokunun üstünü örterek özgün detayların yok olmasına aynı zamanda pencere açıklıkları gibi yapısal ögelerin de günümüze kadar işlevsiz hale gelmesine sebep olmuştur. Mülkiyeti Bitlis Belediye Başkanlığına ait olan yapıya dair Van Kültür Varlıklarını Koruma Bölge Kurulu tarafından 2014 yılında restorasyon kararı alınmıştır. Restorasyonda yapılabilecek müdahalelerin sınırını, yapının taşıdığı tarihî değeri ve hangi anıt grubunda olduğu belirlemiştir. Taşınmaz Kültür ve Tabiat Varlıklarını Koruma Yüksek Kurulu'nun 28.02.1995'te aldığı karara dayanarak 1. Grup yapılar içerisinde korunması gereken yapılar aşağıda belirtilmiştir:

> Evrensel, ulusal ya da yöresel düzeyde mimari değere sahip 'tarihî, anı ve estetik nitelikleriyle korunması zorunlu' yapılardır. Antik yapılar, Ortaçağ yapıları, dini ve askeri mimarlık örnekleri, su yapıları, saraylar, plan düzeni, strüktürü, bezemesi ve malzemesiyle korunması gereken konutlar bu kümenin içerisinde yer alır. (Ahunbay, 2009: 34)

Bu doğrultuda Tarihî Bitlis Belediye Binası tarihî, kültürel, simgesel, anı ve estetik değeriyle 1. Grup Yapılar içerisinde yer almaktadır. Yapıya uygulanacak yeni ek ve değişikliklerin bu grup yapılarda oldukça kısıtlı olmasından dolayı restorasyonda, yalnızca yaşamını sürdürebilmesi için uygun bakımının yapılması ve özgün dokusunun açığa çıkarılması amaçlanmıştır. Yapıya sonradan uygulanmış tarihî değeriyle uyuşmayan betonarme ve sıvalı yüzeyler özgün biçim ve dokuyla değiştirilmiştir. Yapının geleneksel düz dam biçimindeki üst örtüsünün zamanla eskimesi ve aşınmasından dolayı akıtma-nemlenme sorununa müdahale edilmiş ve çatı eklemesi yapılmıştır. İç mekândaki nişler ve pencere, kapı gibi yapı elemanları onarılarak yenilenmiştir. Zemin ve birinci katın bir kısmının tabanı kesme taş ile kaplanırken; birinci katın doğu cephesine bakan diğer odalarına ahşap kaplama yapılmıştır. Islak hacimlerde yalnızca bakım ve onarım amacıyla zemin kaplama, tefriş elemanları ve tesisat sistemine uygun gerekli uyarlamalar yapılmıştır.

Restorasyon sonucu özgün dokusunun tekrar açığa çıkarıldığı yapı, 2016 yılında Bitlis Kültür ve Sanat Derneği (BİSAD) tarafından Sanat Merkezi'ne dönüştürülmüştür. Müzik ve çeşitli el sanatlarının yer aldığı proje kısa sürmüş ve 2018 yılında yeniden Bitlis Belediyesi Ek Hizmet Binası olarak kullanılmaya başlanmıştır. Bu dönem Bitlis çarşısında yürütülen *Kentsel Dönüşüm Projesi* kapsamında değerlendirilen yapıda yeniden bakım ve onarımlar yapılmıştır. Bitlis Belediyesine bağlı Su Tahsilat ve Zabıta Amirliği birimlerinin yerleştirildiği binada ayrıca Belediye Başkanlık Makamı da yapılmıştır (Okur, 2018).

Tarihî yapının Belediye ek hizmet binası olarak özgün işleviyle yeniden kullanımı da kısa sürmüş ve 2022 yılında farklı bir işlevle tekrar kullanıma açılmıştır. Günümüzde bu işlevine devam eden ve tüm onarımların sonucunun mevcut halinde gözlemlenebilen yapı Bitlis Tarihî Büryan Salonu adıyla restoran olarak hizmet vermektedir (Görsel 7).



Görsel 7. Tarihî Bitlis Belediye Binası'nın kronolojik sırayla işlevsel değişim süreci

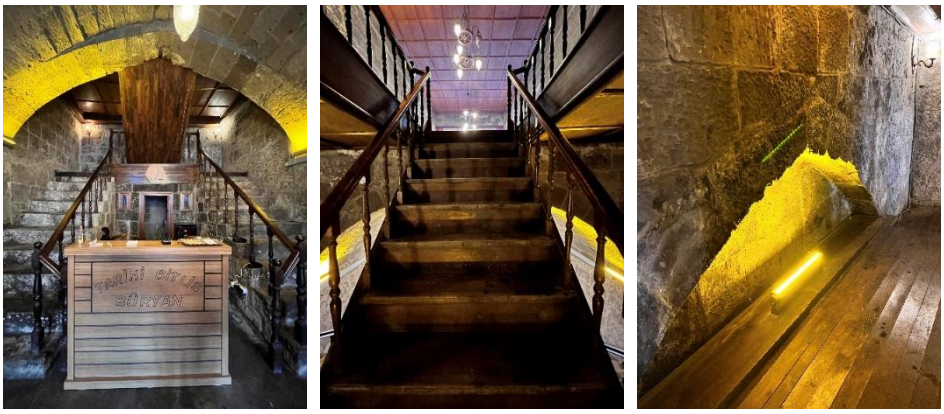
Yapının restore edildikten sonra özgün planı, bezemesi ve strüktüründe herhangi bir değişiklik yapılmadığı fakat restoran olarak işlevlendirildiğinde gerekli mekânsal ihtiyaçlara karşılık sınırlı düzeyde birkaç müdahale yapıldığı görülmüştür.

Yapının plan şemasına bakıldığında orta sofa etrafındaki simetrik sıralı odalar, işlev değişikliğinin gerektirdiği restoran düzenini sağlamak için birbirinden farklı standartlarda yemek masalarının yerleştirildiği bağımsız birimler şeklinde kullanılmıştır. Zemin katta batı cephesi doğrultusundaki iki oda yemek yeme birimleri olarak düzenlenirken; doğu cephesine bakan kuzey kanattaki oda ise etlerin kesimi ve pişirilmesi amacıyla kullanılmıştır. Büryan yemeği tandır tekniği ile pişirildiğinden; aynı düşey aks üzerindeki bodrum katta bulunan odanın tandır kuyusu olarak kullanılması amaçlanmıştır. Bunun için odanın zemininde açılan dairesel yarık, kuyu tandırının yapılması için işlevsel bir gereklilik oluşturmuştur. İşlev değişikliğinden kaynaklanan bu durum tarihî yapının döşemesine doğrudan bir müdahale olarak değerlendirilmiştir. Aynı zamanda bodrum kattaki birimin de amacı ve biçimi yeni işleve uyarlanarak mekânsal bir müdahaleye sebep olduğu görülmektedir. Çünkü artık bodrum katın biçimiyle birlikte anlamı da değişmiş ve mekân tandır kuyusuna dönüşmüştür. Doğu cephesine bakan güney kanattaki oda ise mevcut durumda işlevsel gereksinimi karşılamak için yakıt deposu olarak kullanılmaktadır. Zemin katın tavanlarına bakıldığında; orta sofa ve batı cephesine bakan odalardaki taş strüktürlü beşik tonoz biçiminin yer yer onarılarak korunduğu, doğu cephesindeki odalarda ise yerel mimariye özgü keran döşeme tekniğinin devam ettirildiği görülmüştür. Zemin kattaki tüm alanların tabanlarına kesme taş döşemesi yapılmıştır (Görsel 8).

Görsel 8. Zemin katta bulunan birimlerdeki işlevden kaynaklı yerleşim, onarım ve müdahaleyi gösteren tandır fırını görseli ve katlardaki plan şeması

Plan şemasındaki orta sofalar, diğer birimlere oranla daha geniş ölçekli yemek yeme alanları olarak kullanıma imkân sağlamıştır. Zemin kattaki merdivenkovası giriş aksında kasa için uygun alan sağlamıştır. Sahanlığın altında yaratılan hacim ise herhangi bir belirli amaç için kullanılmamaktadır. Restorasyondan sonra özgün

dokusunun açığa çıkarıldığı kat merdiveninin zemin kattaki çift kolu taş, orta kolu ise ahşap strüktürden oluşmaktadır (Görsel 9).



Görsel 9. Merdiven detayları

Birinci katın tavan döşemelerine, dam üst örtünün zamanla aşınıp su akıtmasıyla oluşan hasarların onarılması ve korunması amacıyla dikdörtgen plaklar halinde çıtalı tavan tekniği uygulanmıştır. Birinci kattaki doğu cephesine bakan her iki odanın zemini ahşap malzeme; diğer alanlar ise kesme taş ile döşenmiştir. Doğu cephesindeki odalardan birine sedir oturma grubu diğerine ise büyük bir yemek masası yerleştirilerek birbirinden farklı standartlarda özel rezervasyonlar için diğer odalara oranla daha özenli düzenlendiği görülmüştür. Diğer odalarda da aynı şekilde sedir oturma ve yemek masası düzeninde birbirinden bağımsız alanlar tasarlanmış, bir diğeri ise çocuk odası olarak kullanılmıştır. Batı cephesine bakan kuzey kanattaki oda mutfak olarak işlevlendirilmiştir. Tandır ve mutfağın aynı katta olmamasının sebebi ise yeni işlevin gereksinimleri karşılayabilecek mevcut yapısal ve mekânsal performanstan kaynaklandığı düşünülmektedir. Çünkü tandır yapısı gereği yalnızca bodrum kat boşluğunun üstünde yer alan zemin katın kuzeydoğu aksında konumlandırılabilmiştir. Buna nazaran su tesisatına yakınlığının etkisiyle daha önceden de birinci katta çözümlenmiş olduğu bilinen mutfak biriminde de yer değişikliği yapılmamıştır (Görsel 10).

Görsel 10. Birinci katta bulunan birimler, birimlerdeki işlevden kaynaklı yerleşim ve onarım, tavan ve taban detayları

Merdiven çıkışının arka tarafında lavabo ve tuvalet bulunmaktadır. Özgün dokusunun korunarak çağın ihtiyacına yönelik yeniden düzenlendiği görülen ıslak hacimlerde tarihî değer okunabilmektedir. Islak mekânın girişinde mukarnas yapılı bir niş içerisine lavabo yerleştirilmiştir. Alafranga ve alaturka olmak üzere iki tip tuvaletin bulunduğu birimlerde kubbe şeklindeki havalandırma bacaları, bezeme ve kemerli nişler özgün haliyle korunmuştur (Görsel 11).

Görsel 11. Islak hacim detayları: Mukarnas bezemeli niş ve havalandırma bacası

Yapının mevcut durumundaki kapı, pencere ve niş detaylarındaki malzemelerden onarılarak kurtarılabilen ve kullanılabilecek derecedeki eskimiş özgün detaylar korunurken; yeni eklenen ahşap doğramaların bazı kısımlarında yapıya zarar vermemek için çivi çakma tekniğinin uygulanmadığı tespit edilmiştir.

Yapının özgün ve tarihî dokusuna zarar vererek pencere açıklıklarının işlevsiz kalmasına neden olan en belirgin müdahale, zaman içinde yapıya sonradan eklemlenmiş kuzey ve güney cephelerdeki kaçak yapılaşmalar olmuştur. Kuzey cephesini tamamen kapatarak doğu cephede tarihî binayla bir bütün olarak algılanan yapı, ayrıca strüktürel açıdan da binaya zarar vermektedir. Birinci kattaki kuzey pencerelerin bir kısmının tuğla ile örüldüğü, bir kısmının ise açık bırakıldığı görülmektedir. Açık bırakılan pencereler ise betonarme olan yan binanın içine açılmaktadır. Buradan hareketle kuzey cepheden eklemlenen binanın tarihî yapının strüktürünü düşey taşıyıcı olarak kullandığı ve yükünü yine tarihî binaya taşıttığı anlaşılmaktadır (Görsel 12).

Görsel 12. Tarihî binaya sonradan eklenen kaçak yapılar: Güney cephesi, kuzey cephesi ve kuzey cephedeki binanın içine açılan pencere detayı

Tarihî yapının mimari, estetik ve kültürel değerine duyarlı bir işlev seçimi, yeniden işlevlendirme sürecinin en önemli aşamalarından biridir. İşlevlendirme sürecinde ise yapının özgün niteliklerine ve mimari kimliğine saygılı bir koruma yaklaşımının benimsenmesi gerekmektedir. Bu kapsamda yapının güncel işlevi değerlendirildiğinde özgün işlevinden uzaklaşıldığı görülmektedir. Yapının tarihî değeri ile yeni işlevi arasındaki uyumsuzluk yalnızca anlamsal bütünlüğü etkilemekle kalmamış aynı zamanda yapısal birtakım müdahalelere ve mekânsal kısıtlamalara da yol açmıştır. Yeniden işlevlendirme sonucunda ortaya çıkan ve görsellerle de desteklenen anlamsal ve fiziksel boyuttaki bu müdahaleler Tablo 1'de hazırlanan evrensel ölçütlere bağlı olarak araştırmacı tarafından belirlenen temalar çerçevesinde Tablo 3'te değerlendirilmiştir. Temalarla ilişkilendirilen değerlendirme, Tarihî Bitlis Belediye Binası'nın işlevlendirme süreçlerinden yalnızca güncelde gözlemlenmesi mümkün olan Tarihî Bitlis Büryan Salonu adlı restoran işlevi üzerinden yapılmıştır (Tablo 3).

Tablo 3. Tarihî çevrenin korunmasına yönelik ulusal ve uluslararası düzenlemelere göre belirlenen temalar çerçevesinde Tarihî Bitlis Belediye Binası'nın işlevsel analizi

Tarihî Çevrenin Korunmasına Yönelik Ulusal ve Uluslararası Düzenlemeler	**Tarihî Anıtların Korunması ile İlgili Mimar ve Teknisyenlerin 1. Uluslararası Konferansı**	**Carta Del Restauro (Restorasyon Tüzüğü)**	**Venedik Tüzüğü**	**Amsterdam Bildirgesi**	**ICOMOS Geleneksel Mimari Miras Tüzüğü**	**ICOMOS Türkiye Mimari Mirası Koruma Bildirgesi**
Tarih	**1931**	**1932**	**1964**	**1975**	**1999**	**2013**
Tarihî Yapıların Yeniden İşlevlendirilmesi Yaklaşımı İçin Belirlenen Ölçütler	Estetik ve tarihî kimliğe saygılı bir amaca sahip olmalı (Madde 1)	Özgün işlevinden çok fazla uzaklaşılmamalı, Yapıda ciddi hasara sebep olunmamalı (Madde 4)	Yararlı bir toplumsal amaca sahip olmalı, Yapının planı ve bezemeleri değiştirilmemeli (Madde 5)	Yapılara ve onların karakterine saygı gösterilmeli	Bütünlüğü, karakteri ve biçimi saygı görmeli	Özgünlüğü, bütünlüğü ve anlamı saygı görmeli

***Temalar**	**Saygılı amaç**	**Özgünlük- Sınırlı Müdahale**	**Toplumsal Fayda- Özgünlük- Saygı**	**Saygı**
Tarihî Bitlis Belediye Binası Yeniden İşlevlendirmenin Temalar Doğrultusunda Analizi	İşlev seçimi yapının estetik ve tarihî kimliğine uygun değildir. Yapının tarihî kimliğini ön plana çıkarmaktan öte geleneksel yemek kültürünün baskın karakteri altında kentsel bellekteki anlamının değişmesine yol açılmıştır.	Özgün işlevinden uzaklaşılmıştır. Yeni işlevin gerektirdiği mekânsal kurgu ve ihtiyaçlar doğrultusunda yapısal müdahale yapılması zorunluluğu doğmuştur. Büryan yemeği yalnızca tandır tekniği ile pişmektedir. Bu sebeple mevcut mekânsal şemanın işlevsel gereksinimini karşılaması için; zemin kattaki cepheye bakan odanın zemininden tandır kuyusu açılmış ve düşeydeki bodrum kata yerleştirilen tandır fırının etrafı doldurularak mekân kapatılmıştır. Yine bu doğrultuda giriş cephesinde tandırla aynı aksta bulunan bir diğer oda da yakıt deposu olarak kullanılmıştır. Dolayısıyla yapının giriş cephesine bakan en iyi konumdaki iki birimi için uygun bir yerleşim yapılmamıştır. Aynı zamanda Yemeğin hazırlanma ve pişirilme aşamalarındaki tandır ve mutfak birimleri farklı katlarda çözümlenerek birbirinden uzaklaştırılmıştır.	Yapının konumu itibari ile kültürel ve ekonomik açıdan çevresel beklentiyi karşılayabilecek bir işlevlendirme olduğu söylenebilir. Fakat işlevlendirme ile birlikte hedeflenen kültürel ve ekonomik kazanımlar için potansiyel kullanıcı-müşteri sirkülasyona uygun çevresel iyileştirmelerin de yapılması gerekmektedir. Örneğin yapıya yakın otopark alanı bulunmadığından yaklaşım yolu üzerinde konumlanan araçlar yolun daralmasına sebep olmakta ve ulaşımı kısıtlamaktadır.	Yapının mimari karakteri, estetik varlığı ve tarihî değerine en çok zarar veren müdahale kuzey ve güney cepheden eklemlenen kaçak yapılaşmalar olmuştur. İki betonarme yapı arasında anlamsal bütünlüğü zarar görürken; fiziksel boyutta da hem taşıyıcı sisteminin zayıflamasına hem de karakteristik yapısını oluşturan pencere gibi cephe elemanlarının kapatılmasına yol açılmıştır. İç mekânda da pencerenin kapatılmasıyla günışığı ve havalandırma engellenerek bu hacimler sağlıksız ve işlevsiz hale gelmiştir. Geleneksel Bitlis mimarisinde cephe kimliğine uygun olmayan bir diğer müdahale ise toprak kaplı düz damın zamanla aşınması ve nemlenerek akıtması sonucu restorasyon geçirerek metal çatı kaplama sistemiyle kapatılmasıdır. Yapılan restorasyonda "saygı" bağlamındaki en olumlu iyileştirme; yapının Bitlis Belediyesi'ne bağlı hizmet birimi olarak "Su ve Otobüs İşletmesi" adıyla işlevlendirildiği döneme tarihlenen 2011 yılında da görüldüğü üzere üzeri betonla veya sıvalarla kapatılan özgün dokularının ve düşey sirkülasyon elemanının tekrardan eski haline döndürülmesi olmuştur.

Tarihî Bitlis Belediye Binası'nın işlevsel değişim süreci evrensel koruma ölçütleri bağlamında değerlendirilmiştir. Özellikle 2014 tarihli restorasyon kararıyla yapılan iyileştirme ve koruma çalışmaları bağlamında yapıdaki özgün dokuların değiştirilmeden üstü kapatılan estetik değerlerin açığa çıkarıldığı ve yalnızca bakım-onarım amacıyla birtakım müdahalelerin olduğu görülmektedir. Fakat yapının biçimi, karakteri ve bütünlüğü korunmaya çalışılsa da cephe kimliğine önemli ölçüde zarar veren kaçak yapılaşmalara engel olunamamıştır. Kendi taşıyıcı sistemini yapının strüktürüne eklemleyen bu kaçak yapıların fiziksel boyutta da zamanla yapıya zarar vereceği öngörülmektedir.

Ulusal ve uluslararası alınan tüm kararlarda çoğunlukla, işlev değişikliğinde özgün işlevden uzaklaşıldığı takdirde yapılan yeni düzenlemelerde yalnızca yapının tarihî kimliğine saygılı bir amaç taşıması kabul edilebilir bir ölçüttür. Bu şekilde yapının anlamsal bütünlüğü değişmeden kentsel bellekteki saygınlığı da korunarak yaşatılması sağlanmaktadır. Tarihî Bitlis Belediye Binası'nın son işlev değişikliği ise toplumsal düzeyde önemli bir kültür değeri ve cazibesi olan geleneksel Büryan yemeğinin hizmetine dayalı restoran kimliğiyle olmuştur. Osmanlı'nın son evresinde Belediyecilik anlayışıyla kurulan tarihe tanıklık etmiş bir resmi kamu mimari yapısının restoran işleviyle kullanılmasının kentsel bellekte yaratacağı çatışma kaçınılmazdır. Bunun yanı sıra geleneksel yemek kültürünün çekiciliği ile mimari yapının tarihî değeri arasındaki uyumsuzluğun toplumsal bellekte yaratacağı karmaşa da muhtemel bir sonuçtur. Yeni işlevin, yapıda daha çok insan trafiği oluşturarak bir dönemin yeniden canlanması ve merak uyandırması adına toplumsal beklentileri karşılayabilecek bir potansiyeli olduğu göz ardı edilmemelidir. Fakat tarihî kimliğin zamanla unutulmasına yol açabilecek ayrı bir kültürel niteliğe sahip olduğundan bu yeni işlevin yapının değerinin önüne geçeceği de düşünülmektedir. Yeni işlevden kaynaklı özellikle tandır kuyusu açılması gibi birtakım müdahalelerin de zamanla yapıda bozulmalara ve yıpranmalara yol açabileceği düşünülmektedir.

Mekânsal olarak işlevin gerektirdiği ihtiyaç programına uyum sağlaması için yapılan plan organizasyonu yapının özgün şemasının taşıdığı konumsal ve hacimsel potansiyelin iyi değerlendirilmediğini göstermektedir. Genel olarak bakıldığında seçilen işlev sürdürülebilir bir sosyoekonomik ve sosyokültürel nitelik taşıması bakımından topluma yararlı bir amaç doğrultusunda gerçekleşmiş olsa da fiziksel ve anlamsal düzeyde tarihî yapıya uygunluğu tartışmaya açıktır. Yapının yakın çevresi de yapıyla ilişkili olabilecek doğal ve yapay verileri içermesi bakımından işlevlendirme sürecine dâhil olunması gereken en önemli alanlardan biridir. Gürültü, havalandırma ve doğal ışık gibi olumlu ve olumsuz kaynakların yönetilmesi doğrultusunda yakın çevrenin analizi yapılarak işleve uygun çözümlemelerin yapılması gerekmektedir. Örneğin; zemin kattaki birçok birimin pencerelerinin yapıya bitişik inşa edilen betonarme yapılardan dolayı kapatılmış olması mekânın hava ve aydınlatma kalitesini olumsuz etkilemiştir. Yaklaşım yolu da yapıya ulaşım noktasında sirkülasyonun akışını yönlendiren bir tasarım problemidir. Örneğin; yapıya yaklaşım yolu dar ve engebeli bir sokak olmasının yanı sıra yapının çevresinde herhangi bir otopark alanı da bulunmamaktadır. Bu durum yapıya erişilebilirlik derecesini kısıtlı hale getirmekte ve işlevlendirme sürecinde çağdaş beklentileri karşılayamamasına neden olmaktadır. Bu doğrultuda yeniden işlevlendirmede, tarihî bir çevre veya engebeli bir sokak olsa bile yapıya kolayca ulaşımı ve belirli bir süre konaklamayı gerektiren bir işlev seçiminde çağdaş yaşam beklentilerini karşılayabilecek düzeyde çözümlenmesi gerekmektedir.

SONUÇ

Tarihî yapıların korunması, maddi bir varlığın yitirilmesini önlemenin ötesinde toplumların geçmişi ile geleceği arasında anlamlı ilişkiler yaratması bakımından önemli sonuçları olan bir pratiktir. Zamanla değişen kültür ortamında kütlesel varlığını sürdüren tarihî bir yapı, temsil ettiği dönemin hatırlatıcısı niteliğindedir. Aynı zamanda bilimsel, sanatsal, tarihî ve mimari boyutuyla da geçmişin izini taşıyan somut verileri içermektedir. Sürdürülebilir bir koruma yaklaşımı çerçevesinde yapının kentsel yaşama kazandırılması, toplumsal ve çevresel bir sorumluluk taşımaktadır. Bu noktada en etkili çözümlerden biri, yapının mimari, estetik ve kültürel değerine zarar vermeden, çevreye ve topluma yararlı bir amaç doğrultusunda işlevlendirilerek kullanıma açılmasıdır.

Araştırma kapsamında; inşası II. Abdülhamid Dönemi'ne tarihlenen ve kentin geleneksel mimari dokusunu temsil eden Tarihî Bitlis Belediye Binası'nın işlevsel değişim süreci değerlendirilmiştir. Kütlesel varlığını sürdüren tarihî yapı özgün işlevinden sonra farklı amaçlarla sürekli olarak yeniden işlevlendirilmiştir. Fakat

uygulanan işlev değişikliklerinde uzun vadeli istikrarın sağlanamaması dikkat çekici olmuştur. Yeniden işlevlendirme ile ilgili yasal düzenlemeler ve evrensel yaklaşımlar irdelendiğinde; yapının özgün işlevine paralel bir işlev seçiminin tarihî ve mimari verilerin korunması açısından daha uygun olduğu vurgulanmıştır. Bu doğrultuda işlevsel değişim süreçlerine bakıldığında yapının özgün işlevine ve plan şemasına uygun işlevlerin de uzun süre yürütülemediği görülmüştür. Bu sebeple işlevlendirme aşamasında çağdaş yaşam koşullarındaki toplumsal beklentilerin, fiziksel ve kültürel anlamda yapılı veya doğal çevre verilerinin etkisinin göz ardı edildiği düşünülmektedir. Son olarak tarihî yapı restoran kimliğiyle kentsel yaşama katılmıştır. Bu işlevlendirmeyle çevresel beklenti ve potansiyel açısından sosyal, kültürel ve ekonomik kazanımlar sağlansa da kentsel bellekteki tarihî değerin zamanla yön değiştireceği ihtimali de göz ardı edilmemelidir. Geleneksel Bitlis Büryan yemeğinin özellikle gastronomi turizmi açısından kentsel bellekte yarattığı yeni kodlamalar ile yapının tarihî kimliğinin önüne geçerek eskinin yok sayılmasına ve bir süre sonra unutulmasına neden olabilir. Ayrıca işlevsel değişimin özgün işlevine uzak olmasından kaynaklı olarak, plan şemasında uyuşmazlıklara ve yapısal müdahaleye yol açılmıştır.

Tarihî Bitlis Belediye Binası'nın işlevlendirilme sürecinden yola çıkılarak yapının taşıdığı anlamsal değeri ile birlikte bütünsel varlığını korumayı esas alan bir yeniden işlevlendirme için önerilen adımlar aşağıda sıralanmıştır.

- Yapının fiziksel varlığının özgün işlevini ne ölçüde karşılayabildiği ve hangi durumlarda yetersiz kaldığı belirlenmelidir.
- Özgün işlevi çağdaş yaşam içerisinde yok olmuş veya binanın fiziksel performansı artık bu işlev için yetersiz kalmışsa ve bu durumda yeni bir işlev gerekiyorsa binanın özgün karakteri, kimliği ve mevcut verileri analiz edilmelidir.
- Yapının kütlesel varlığı kentsel bellekteki mimari kimliğinin korunması için yeterli değildir. Özgün dokuya duyarlı, tarihî kültürel değere saygılı toplumsal ve çevresel farkındalıkla bilinçli bir işlevlendirme yapılmalıdır.
- Tarihî bir yapının yeniden işlevlendirilme sürecinde mekânsal, yapısal ve çevresel verilerin etkisi değerlendirilmelidir. Yeniden işlevlendirmede müdahale oranını azaltan en uygun çözüm verilerle uyumlu bir ihtiyaç programına sahip işlev seçimidir.
- Çağdaş yaşam koşullarındaki çevresel ve mekânsal beklentiler göz önünde bulundurularak sürdürülebilir bir çözümleme yapılmalıdır.
- Yapıda çevresel olarak işlevsel performansı etkileyen olumsuz kaynaklar ortadan kaldırılmalı veya bunların etkisini azaltan tasarım yaklaşımları geliştirilmelidir.
- İşlevlendirmeye sürdürülebilir bir ekonomik, kültürel ve toplumsal kaygıyla yaklaşılmalıdır.

Sonuç olarak, bu çalışma ile birlikte tarihî yapıların yeniden işlevlendirme süreci için bir farkındalık yaratması amaçlanarak; Bitlis kent belleğinde önemli bir değer olan Tarihî Bitlis Belediye Binası'nın işlevsel dönüşümünün özellikle "saygı" ölçütü bağlamında yeniden gözden geçirilmesi umulmaktadır.

Authors' Contributions

The author contributed 100% to the study.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

This study does not require ethics committee approval.

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Research Article

A contemporary interpretation of abstraction and creativity through Islamic patterns in design education: Interior architecture studio experience

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Abstract
The goal of this study is to develop a studio experience that will allow second-year interior architecture students to incorporate the continuity of traditional Islamic patterns into contemporary designs. Islamic geometric patterns from the Seljuk eras were investigated as part of the study's focus, and these patterns were used as a foundation for the development of a novel design model. It is important for the systematization of the design process that the working methodology is structured in three phases, namely the analytical phase, the creative phase and the application phase. The process of gathering data is part of the analytical phase, but the creative phase is where the data is abstracted and interpreted. As a result, the study has been presented as a unique one in terms of bringing awareness of conventional and regional patterns in interior architecture education as well as sustainability with motivated, abstract, avant-garde, and contemporary approach.

Keywords: Islamic patterns, Creativity, Abstraction, Interior architecture

Extended Abstract

Introduction: The foundations of creative thinking are discovering the potential of cultural and architectural heritage and incorporating it into contemporary life to produce something new and original in problem-solving in design education (El-Zeiny & Ezzat, 2021). One of the original arts that directly influences modern designers design processes is culture, which serves as the main prototype of modern design. For this very reason, cultural influences are like an endless source of inspiration for modern design and its rich soil that cannot be disregarded (He, 2022). Geometric motifs are widely used in architectural elements, even though they were first used in Anatolian culture in Turks during pre-Islamic times and can be found in every age (Sönmeztürk et al., 2022: 49). Ahmed (2022) emphasized that while researchers and study geometric patterns' history, technique, philosophy, and other facets, there haven't been enough studies on how to incorporate them into modern life. However, patterns can be used abstractly in modern structures. Different techniques can be used in the educational process to realize the designers' interpretation model by abstracting traditional patterns.

Purpose and scope: The study's main issue in this context is that interior architecture education does not provide enough groundwork for creative thinking, despite the prevalence of Islamic patterns that reflect our nation's cultural identity in architectural works. The study aims to reveal original, contemporary lines that are not imitated, as well as to foster creative and abstract thinking by incorporating patterns that carry the spirit of Islamic culture and heritage into the interior design studio process. Students of interior architecture from various parts of the nation were asked to observe Seljuk structures in the cities they reside in and conduct research on the Islamic patterns of the structures as part of the study. As a result, the modern design environment is a platform that provides distinctive solutions that holistically integrate the past and

present. The concept of incorporating and developing the said approach in the educational process of various design disciplines should be expanded to increase the number of original and creative designs inspired by the cultural data of societies. Additionally, the study enhances the students' design skills as they learn interior architecture within the context of the design process.

Method: In the study, Selcuk University Faculty of Architecture and Design Interior Architecture Project II studio, within the scope of the 2021-2022 spring semester, the interior design of the store (textile, cosmetics, sports) where the products of world-famous brands are exhibited using Islamic pattern patterns were given to the students as a project subject. It aims to demonstrate various viewpoints on creativity and abstraction in this context. The abstraction action that was mentioned in the study was formal abstraction; functional and semantic abstraction were not included. Islamic geometric patterns from the Seljuk eras were investigated as part of the study's focus, and these patterns were used as a foundation for the development of a novel design model. It is important for the systematization of the design process that the working methodology is structured in three phases, namely the analytical phase, the creative phase and the application phase. The process of gathering data is part of the analytical phase, but the creative phase is where the data is abstracted and interpreted. With the completion of the interior design studio process, the students' final products reflect a systematic process that integrates design and art.

Findings and conclusion: One of the most crucial requirements for creativity is the ability to come up with fresh, original ideas. According to Stein (1953), creativity should be defined according to the culture it exists in, and "innovation" or "being new" denotes the fact that creative production takes on a new form. As a result of the study, it has been found that the abstraction method, which combines the modern and the traditional and carries the past into the future, plays a key role in the development of the design and the advancement of the design process with the correct steps in the transition from concrete to abstract. With the help of the abstraction model, it has significantly aided in the growth of students' capacity for original and creative problem-solving. Islamic patterns exhibit the mirror quality that reflects the culture of societies because they have historical, cultural, and social meanings in addition to geometric ones. The study's noteworthy contribution to both the recognition of the culture and the increase in awareness and sustainability of the culture for future generations without being imitated has emerged as a result of fusing the traditional with the modern and using Islamic patterns as a design base.

Keywords: Islamic patterns, Creativity, Abstraction, Interior architecture

INTRODUCTION

Through the development of students' analytical thinking, questioning, interpretation, and original design skills, architecture and interior architecture education primarily aims to provide two- and three-dimensional solutions. The development of these abilities requires creative thinking. Since creativity is a skill that can be learned and improved (Robinson, 2001), many studies have proposed various techniques to foster creative thinking. The application of these techniques, particularly in the educational process, promotes the development of various creative outcomes (Kaya & Bilgiç, 2020: 273). The foundations of creative thinking are discovering the potential of cultural and architectural heritage and incorporating it into contemporary life to produce something new and original in problem-solving in design education (El-Zeiny & Ezzat, 2021: 595). One of the original arts that directly influences modern designers' design processes is culture, which serves as the main prototype of modern design. For this very reason, cultural influences are like an endless source of inspiration for modern design and its rich soil that cannot be disregarded (He, 2022). Geometric motifs are widely used in architectural elements, even though they were first used in Anatolian culture in Turks during pre-Islamic times and can be found in every age (Sönmeztürk et al., 2022: 49). Geometric patterns were described by Altın (2022: 531) as motifs and compositions created by combining broken and straight lines, stars, polygons, and other shapes. Patterns, which are quite prevalent in Turkish art, have a sort of defining characteristic regarding the traits of the eras in which they are used and their Fundamentals (Mülayim, 1998: 219).

In various areas (facade, interior, accessories) of contemporary architectural structures, it is now fairly common to copy Islamic patterns (Öztürk & Türkoğlu, 2016). Unconsciously copying and using patterns, however, results in the spirituality of the patterns being lost, simplified and sometimes even disidentified when viewed in terms of the meaning and identity of Islamic patterns. Being traditional without mindlessly copying and reiterating the past, while also being contemporary by interpreting the past without rejecting tradition, is one of the best solutions for modern architecture. Traditional and modern styles of Islamic architecture should

coexist in today's designs (Sobh & Samy, 2018: 1079). For this reason, it is foreseen to carry out researches that can adapt Islamic patterns to modern architecture. Ahmed (2022: 291) emphasized that while researchers and orientalist study geometric patterns' history, technique, philosophy, and other facets, there haven't been enough studies on how to incorporate them into modern life. However, patterns can be used abstractly in modern structures. Different techniques can be used in the educational process to realize the designers' interpretation model by abstracting traditional patterns.

The incorporation of these methods in the educational process is crucial in terms of maintaining the integrity of the link between the past and the present, along with studies on methods based on modern interpretation inspired by Islamic patterns (Latiff, 2012; Bökü, 2009; Özkar & Erkmen, 2019; Azari et al., 2023). It can be seen that Islamic Motifs are used as a base for the development of creativity in the design process, especially in Interior Architecture education when the studies that abstract Islamic patterns and use them in modern architecture in design education (Köse Doğan, 2017; Sobh & Samy, 2018) are examined. In the context of the Interior Architecture project course, Köse Doğan (2017) instructed the students to stylize and reinterpret the motifs present in the Seljuk period structures in Konya and Kayseri to create a unique project. The study's stylized motifs were incorporated into the design of the space's various elements, from lighting to exhibition components. Similarly, El-Zeiny & Ezzat (2021) conduct a study on the function of cultural schemes, which are a reflection of local identity and traditional life, in the interior design process by interpreting them. With the study, it is hoped to develop the next generation of interior architects, who will interpret existing cultural patterns to create modern interiors with more sophisticated solutions while preserving local identity. As a result, a creative thinking model derived from regional motifs can be seen in the design process of interior architecture education, which demonstrates an integrated structure between the past and present.

The study's main issue in this context is that interior architecture education does not provide enough groundwork for creative thinking, despite the prevalence of Islamic patterns that reflect our nation's cultural identity in architectural works. The study aims to reveal original, contemporary lines that are not imitated, as well as to foster creative and abstract thinking by incorporating patterns that carry the spirit of Islamic culture and heritage into the interior design studio process. Students of interior architecture from various parts of the nation were asked to observe Seljuk structures in the cities they reside in and conduct research on the Islamic patterns of the structures as part of the study. It is anticipated that an abstracted motif from the acquired patterns will be used as an input in the design. By abstracting the existing pattern, it is hoped that students will develop the phenomenon of creative thinking as well as knowledge of the historical background of the city they live in. The analytical, creative, and application phases of the design process model, which integrates traditional and modern by abstracting cultural patterns into tangible projects, are crucial.

Conceptual Infrastructure

Significance of abstraction and creativity in interior architecture education

People need to correctly identify, analyze, and comprehend the essence of issues in their environment in order to design. Only the act of abstraction makes it possible to define, examine, and ultimately arrive at the essence of facts and events. Abstraction provides the most important information because concrete facts and events can only provide us with a formal and external reality (Hançerlioğlu, 1993).

By ignoring components like the design or the quality and relationship of a concept, the act of abstraction helps to distinguish the general and the essential from the non-essential in a straightforward manner (Nezor, 2011: 7). To realize the most competent stage of the information process, abstraction is done at this very point. In reality, abstraction is a technique, a tool, used to return to the concrete and understand the concrete whole in its relationships with its constituent parts. Hegel claims that abstraction represents the reality of the being, which is still in its unrevealed state and is just beginning to reveal itself. The abstract and the pure and simple are equivalent in this regard (Hançerlioğlu, 2005). Semantic, functional, and formal abstractions are all handled differently (Nezor, 2011: 65). The indirect expression that characterizes the objects with the accumulation of the individual from the past is a semantic abstraction. These abstractions make use of expressions that indirectly characterize the object and are revealed by its connotations, which the individual associates with her/his own objects. Functional abstractions include space analyses for additional information and drawings comparing the functionality of various spaces to facilitate problem-solving during the design phase. On the

other hand, formal abstraction is the kind of abstraction that results from expressing concrete forms in a way that simplifies them. To describe a concrete form in pure language, one must either reduce it to its geometrical components or use abstract structure lines or contours to describe it. Examples of the formal abstraction type in architecture can be found in the impression sketches and descriptions created during the planning stage of the design process. Such sketches aid in the development of knowledge and methodical thought in architectural education (İnceoğlu,1995). Formal abstraction is a technique used by designers to gather environmental data before beginning their work, to develop ideas for formal searches in their sketches, and to purge designs of unnecessary details (Nezor, 2011: 66). It is possible to claim that abstraction in this situation is creatively revealing. To create a product, the design process oscillates between the abstract and the concrete, rather than just developing at the abstract level. It won't ever be applicable if not. As a result, to produce this increasingly concrete architectural design product, designers cultivate their creativity by alternating between concrete and abstract (Nezor, 2011). One of the key tools for teaching and fostering creativity in the education of designers is abstraction (Robinson, 2001). According to Nezor (2011: 42), by abstracting, architecture students can capture the essence, and create original, creative designs that will boost the designer's creativity and give users a variety of options. Because designers perceive things differently, researchers claim that including abstraction in interior architecture education has a guiding and differentiating effect on design education (Ertürk, 1984). But in today's world, where communication and technology are always evolving, the idea of creativity in interior design is becoming more and more significant (Uzunarslan & Polatkan, 2011).

According to Kılıçaslan and Ziyrek (2012), creativity is a crucial factor in producing original design products in design education, and design education should be improved to foster creativity. Additionally, it was pointed out that creativity is typically assessed in terms of the final product, and it was determined that there are activities that foster students' creativity to advance design education. In the study by Tavşan and Sönmez (2010), some students studying interior architecture received instruction using the abstraction method, while a different group received instruction using the traditional method. With the results obtained, it is evident that the expression activated by the abstraction method is superior to the traditional expression method in terms of raising student achievement and the degree of knowledge permanence. The study's findings (Aşkın, 2020: 121) show that abstraction encourages the development of creative thinking in the design process. As a result, interior architecture students are able to think more deeply and without as many restrictions.

Within the context of one's mental activities, creativity includes the stages of producing and discovering; this process also involves intuitive thinking. The production of preliminary creative structure, preliminary creative discovery and interpretation, production of creative thinking, creative discovery and interpretation, and product development are all parts of this creation process, which is based on production and discovery. The creative process that emerges from these mental activities is concurrently influenced by the personal and cultural aspects of the designer (Smith et al., 1995). These cultural elements, which include Islamic patterns, act as a link between the past and the present.

Islamic patterns and their use in creative thinking in interior architecture education

Due to certain restrictions on the use of human or natural figures, geometric patterns play a significant role in Islam as an art form and for ornamental purposes. Architecture has long utilized geometric patterns, which have evolved over time and place (Reki & Arslan Selçuk, 2018: 83). Islamic art has been shaped by the conditions and traditions of each Islamic state. During the Seljuk eras, architectural creations reflected the growing understanding of Islamic art in Turkish society (Dalağan, 2012: 75). As a result, the primary visual characteristics for designating a structure as having Islamic architecture are Islamic geometric patterns. In addition, these geometric shapes and ratios highlight a crucial area of investigation for modern architecture as a tool for creativity (Matinpour & Arslan Selçuk, 2018: 89). Focusing on this subject, particularly during the designers' educational process, will encourage the development of their creative imagination (Uraz, 1993). Because family, society and education are at the forefront of the development of individuals' creativity (Kaya & Bilgiç, 2020: 283). Education in interior architecture is not organized around a rigid, one-dimensional teaching/learning process. Instead, it is a type of education that requires a framework that points design students toward active, multidimensional thought processes (Cross, 2001). The act of designing interacts with creative thinking as a fundamental component of the educational process. Methods that will support this process and bring creativity to the fore in design gain importance given that design education is a process of

creating, experiencing, and researching (Garip & Garip, 2012). Carrying the past into design by interpreting it rather than imitating it is one of the techniques used in the emergence of creative thinking. Various researchers in interior architecture education have addressed creative thinking as a way to bring the past into the present and to blend the modern with the traditional.

El-Zeiny and Ezzat (2021), using the theory of cultural schema, looked at how incorporating elements from regional identity into contemporary designs affected the graduation project process for interior architecture. With the help of this study, which lays the foundation for how to interpret Egypt's cultural heritage through the interior design process, it has been made apparent that it is possible to integrate the traditional and the modern. Similarly, Köse Doğan (2017) requested that students incorporate interior designs into her interior design project by interpreting Seljuk motifs. Students both learned about Seljuk culture as a result of the study, and they created a three-dimensional interior work using traditional two-dimensional motifs. Incorporating traditional culture into interior design projects not only satisfies modern people's desires for material goods and ideals of living but also creates a perfect marriage with a modern lifestyle that abstracts their traditional cultural beliefs and values (Liu & Li, 2016: 11110). As a result, creativity must be fostered in the transforming cultural heritage brought about by evolving technology (Angelina et al., 2021: 1132). Islamic motifs' importance in design education cannot be understated because they are a result of the culture of the society in which people live.

METHOD

In order to foster creative thinking in design education, this article focuses on the idea of developing a design module by abstracting Islamic patterns. Some societies' Islamic patterns have social, cultural, and historical significance in addition to their visual appeal. Therefore, within the context of the Interior Architecture studio course, a model has been developed to ensure the integration of the traditional and the modern in an integrated system. A design process based on Islamic patterns has been tried to be examined by using this model in design education. The right steps should be used to support the design process, which is described as the order of actions made up of the tools and techniques used during the design (Lawson, 2005: 33). In the course of analysis, synthesis, and development, the pattern is abstracted as a result of data collection efforts intended to address the issue. Designing each stage of the design process with a flexible structure that can accommodate feedback is a good idea. A feedback loop between stages of the design process is recommended by Archer (1984) and Cross (2005: 35-36). The three main phases of the proposed processes are "analytical", "creative", and "implementation" (Figure 1).

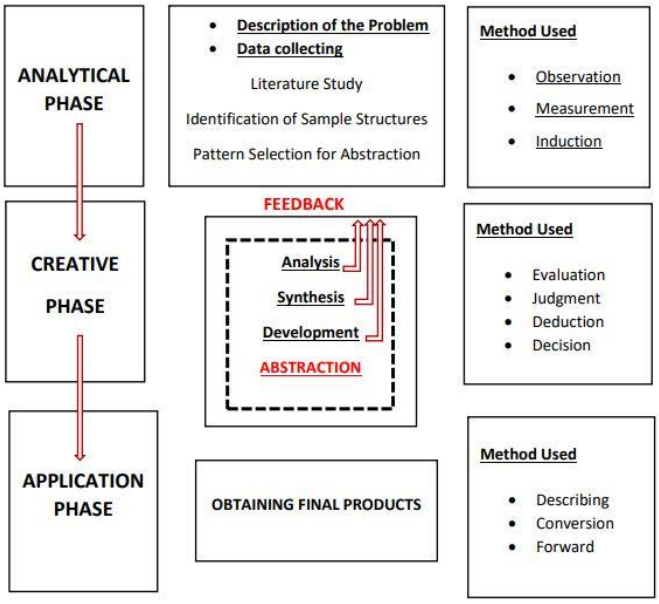


Figure 1. The design process used in the study

Interior Architecture Studio Process

In the study, Selcuk University Faculty of Architecture and Design Interior Architecture Project II studio, within the scope of the 2021-2022 spring semester, the interior design of the store (textile, cosmetics, sports) where the products of world-famous brands are exhibited using Islamic pattern patterns were given to the students as a project subject. It aims to demonstrate various viewpoints on creativity and abstraction in this context. The abstraction action that was mentioned in the study was formal abstraction; functional and semantic abstraction were not included. It aims to allow students to discover learning based on the process of an interior design studio and to forge a connection between the past and the present. The students were given restrictions in the design so they could create a path. Islamic patterns placed restrictions on the Seljuk periods. Students were asked to use the Islamic pattern in that city as a design inspiration based on the premise that the stores to be designed could be located in any city in our nation. Students visited Seljuk period buildings in the cities they lived in to gather information during the analytical phase, which is the first phase of the study. The students also looked at the motifs found on carpets and rugs from the time period in question. Following the test, the students discussed their findings and prior knowledge of Islamic patterns in the studio setting and exchanged information. Later, they finished the analysis stage of the design process by arbitrarily selecting one of the Islamic motifs they had looked at to create formal abstraction. The part-whole relationship was used to evaluate the Islamic motif that was chosen during the creative phase, and it was then simplified by interpreting. Flashbacks encountered during the abstraction process have led to the motif's essence. The application phase was finished by incorporating the acquired original state as a design element in the store's facade and at various locations inside.

FINDINGS

In the study, the stages of the concept of abstraction in design were tried to be conveyed to the students in the process of original and creative design. The students realized the act of abstraction with the method of the concept of abstraction in design with the Islamic patterns they identified through materials such as architectural artifacts, ruins, and equipment. The act of abstraction in space design aims to provide students with original thinking skills. This helps students to produce creative designs that respond to the unique needs and cultural values of users, rather than simply conforming to standard design templates. In the first phase of the study, the appropriateness of the Islamic patterns found by the students with various alternatives was emphasized and the abstraction phase of the selected pattern was started. The study was carried out in five stages and these stages are shown in Figure 2.

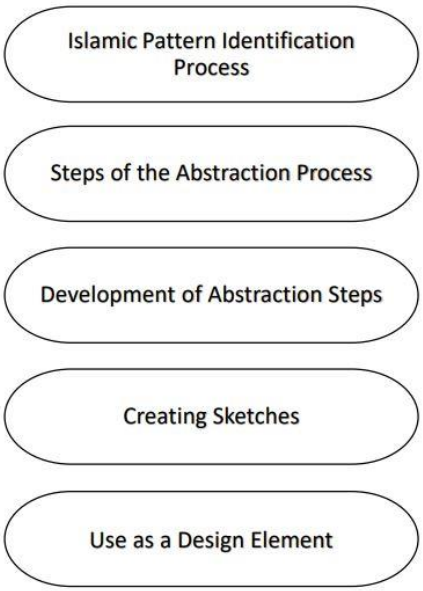


Figure 2. Project implementation phases

While applying the abstraction phase in the design, Arnheim's (2015) abstraction relationship between pictures and symbols was taken as a basis. The study is based on the evaluation, analysis, and interpretation of all the data belonging to the design problem and their relationships with each other.

The abstraction alternatives made by the students were realized in four stages, discussed and interpreted within the scope of the project lesson. The Islamic pattern showing the stages of abstraction and the steps of abstraction are given in Figure 3.

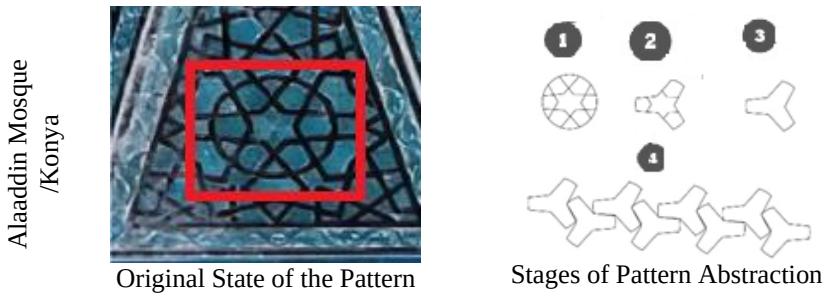
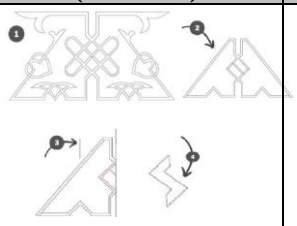
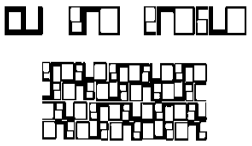
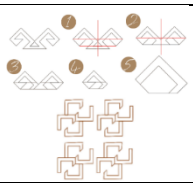
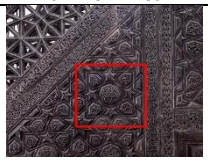
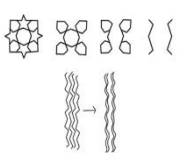
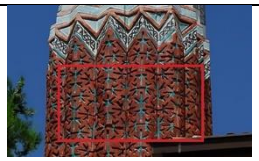
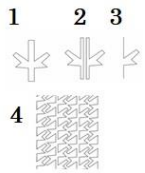
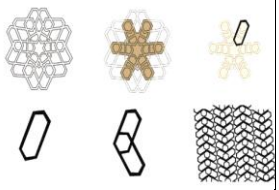
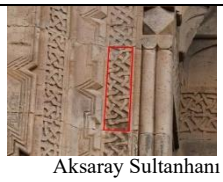
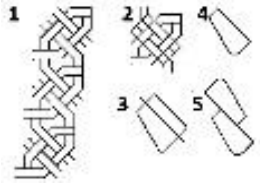
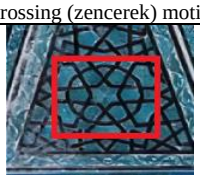
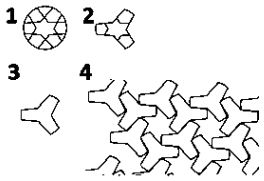
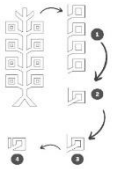


Figure 3. Islamic Pattern Abstraction Example

Changes/transformations have occurred in the forms and proportions of Islamic patterns, allowing abstraction to reach authenticity. With the Islamic patterns becoming simpler and free of ornamentation, a design process was realized in which traditional traces were maintained on the contemporary store interior and facade surfaces (Table 1). Thus, while reaching the final product in the design process, the abstraction method plays an important role in the formation of the design in the transition from concrete to abstract. The concept of creativity, which is associated with original thinking in the abstraction of Islamic patterns, shows that different results are obtained from person to person. In this case, it is thought that many factors such as the cultural experience that designers have physical and social characteristics are effective in creativity.

Table 1. Interior architecture studio process and final products

Project Designers	Analytical Stage (Data Collecting)	Creative Stage (Abstraction)	Implementation Phase	
			Shop Facade Suggestion	Shop Interior Suggestion
Yasemin Dişçi Maisalrim Khattab Channel Store	 Afyon Ulu Mosque Wooden console scarves between cardigan pattern			
Merve Çakmak M.Metehan Uyanık Dolce Gabbana Store	 Ince Minaret Madrasa Konya Bayındır stamp			
Melike Öztürk Gökçe Öncel Alexander McQueen	 Ram horn motif			
Başak Yazgan Merve Nur Çukuryer Steiff Store	 Konya Alaeddin Mosque pulpit			

Gülser Uysal Selcan Çamoğlu Prada Store	 Konya Owner Ata Mosque crown gate			
İbrahim Şahin Bayram Çelik Rolex Store	 Amasya Yörgüç Pasha Mosque window wing woodwork			
Zeynep Kodaloğlu Ruveyda Esra Hekimoğlu Patchi Store	 Aksaray Sultanhanı Caravanserai arch edges crossing (zencerek) motif			
Kader Deniz Çoban Fadime Çukur Adidas Store	 Konya Alaaddin Mosque			
Derya Nur Kemikli Hatice Sena Kocatürk Teslime Eda Yılmaz	 Tree of Life Motif			

This is comparable to the research accomplished by Kılıçaslan and Ziyrek (2012) on the teaching of creativity in interior architecture. However, while deciding to use the Islamic pattern, details about the local identity and culture were learned through techniques like actually seeing the architectural structures, making observations, and taking pictures of them. As a result, recognizing cultural heritage and investigating the potential of patterns for design, complements the work of El-Zeiny and Ezzat (2021). Another finding from the same study shows similarities to research that has greatly aided the education of interior architects in a variety of designs by interpreting cultural diversity. As a result, more study is necessary to fully understand and interpret the geometric structure of Islamic patterns, as stated by Ahmed (2022) and Fatihaddin et al., (2018).

CONCLUSION

One of the most crucial requirements for creativity is the ability to come up with fresh, original ideas. As a result, one of the qualities a design student should possess is creativity. It is crucial to incorporate the designs that students envision in their minds with culture to strengthen the connection between the past and the present in order to foster creativity in design education. According to Stein (1953), creativity should be defined according to the culture it exists in, and "innovation" or "being new" denotes the fact that creative production takes on a new form. Existing information or material may require new integrations, but must also contain new elements (as cited in Öncü, 1992).

In the past and present, societies have used a variety of geometric patterns to express their history, culture, and traditions in a variety of design contexts, including textiles and architecture. These patterns' underlying meanings reveal cultural influences. Traditionality and locality are in danger of becoming extinct in every aspect of contemporary life, which is uniformizing as a result of globalization. Researchers have emphasized maintaining the identity of the current culture while preserving its meaning and passing it on to future generations without being copied for this reason. As a result of the study, it has been found that the abstraction method, which combines the modern and the traditional and carries the past into the future, plays a key role in the development of the design and the advancement of the design process with the correct steps in the transition from concrete to abstract. In the study, a design education process was carried out to draw attention to the concepts in question for students studying design, in order to address the problem of not being able to integrate cultural and local traces into contemporary life. With the help of the abstraction model, it has significantly aided in the growth of students' capacity for original and creative problem-solving. Islamic patterns exhibit the mirror quality that reflects the culture of societies because they have historical, cultural, and social meanings in addition to geometric ones. The study's noteworthy contribution to both the recognition of the culture and the increase in awareness and sustainability of the culture for future generations without being imitated has emerged as a result of fusing the traditional with the modern and using Islamic patterns as a design base. The process of getting design products that are plain, free of ornaments, and made with essential geometric shapes has also positively impacted the designers' creativity. This is because Islamic patterns have a strong aesthetic appeal that transcends time and space as well as language and culture. The patterns may not resemble Islamic motifs due to "contemporary" touches. However, the underlying structure of the geometries is the abstraction of traditional Islamic patterns. Thus, this study is important in terms of contributing to the production of new forms of design strategies and ideas in interior architecture education and the physical evolution of the traditional towards the modern. The abstraction of patterns is not a rupture, but in fact a step of self-discovery. Thus, it creates a form that not only encompasses traditional Islamic design, but also allows these designs to evolve with contemporary interiors as a new and additional art of Islamic geometries. The endless pattern-making process of Islamic geometric art offers a rich blend of cultural background, the origin of geometries and a contemporary view of exploration. The intuitive impulse to adapt to contemporary practices takes on a role that allows it to become a hallmark and signature of the designer who created it.

As a result, the modern design environment is a platform that provides distinctive solutions that holistically integrate the past and present. The importance of the study in the scientific platform is expressed by researching various cultural elements, developing a model through the application, and incorporating them in the design process through the interior design studio. The concept of incorporating and developing the said approach in the educational process of various design disciplines should be expanded to increase the number of original and creative designs inspired by the cultural data of societies. Additionally, the study enhances the students' design skills as they learn interior architecture within the context of the design process.

Authors' Contributions

The 1st author contributed 50%, the 2nd author contributed% 50 to the study.

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Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

Ethics committee approval is not required.

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Figure 1: According to Archer (1984: 64) and Cross (2005: 35), edited by the authors.

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Research Article

Cami tipolojisinin göstergebilimsel analizi: TBMM cami örneği

Semiotic analysis of mosque typology: Case of the Grand National Assembly (TBMM) Mosque

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Özet

Camiler Müslüman toplumların günlük yaşamında önemli yer tutan, sosyal yaşam biçimini etkileyerek şekillenen dini yapılardır. İslam'ın kabul edilişinden bu yana, yapı formunda teknoloji, sosyal yaşam ve kültüre bağlı değişimler yaşanmıştır. Kullanılan cami tipolojisi, gelenek ve sosyal yaşam biçiminden aktarılarak oluşmuş hem kültürel hem dinsel çeşitli aşamalardan geçerek yoğrulmuş alışılagelmiş formlara dayanmaktadır. Sayıca az da olsa çağdaş denemeler de mevcuttur. Çalışmanın amacı çağdaş cami tipolojilerinin yapı, iç mekân ve donatı bağlamında ortaya koyduğu değerleri göstergebilimsel analizle okumak, mekândaki anlamsal ilişkileri keşfetmektir. Bu amaçla TBMM Cami iç mekân özellikleri bakımından araştırmanın örneği olarak seçilmiştir. Konuya iç mekân ölçeğinde yaklaşmak amaçlansa da hem İslam felsefesi hem de bu felsefenin mekâna yansıması bakımından mimari kabuk ve ibadet mekânı bir bütün olarak irdelenmiştir. TBMM Cami üzerinden yürütülen durum araştırmasında, veri toplama yöntemleri olarak doküman inceleme ve katılımcı gözlem kullanılmış, veriler göstergebilimsel analizle değerlendirilmiştir. Bu kapsamda cami yapısının geleneksel biçimleri incelenmiş, mimarlıkta göstergebilim konusu irdelenmiştir. Verilen bilgiler ve yapılan gözlemler ışığında örnek yapı, göstergebilim yöntemi ile çözümlenmiştir. Hedeflenen sonuç, örnek olarak incelenen modern uyarlamanın iç mekânda yapıya yüklediği işlevsel ve anlamsal katkılar üzerinde durmak, mimarinin okunabileceğini ortaya koymaktır. Bu çalışma modern cami uyarlamalarında, geleneksel cami tipolojisinde yer edinen anlamsal ve dinsel altyapının yer alıp almadığını anlamaya çalışmaktadır.

Anahtar Kelimeler: Cami iç mekânı, Modern camiler, TBMM Cami, Göstergebilim

Abstract

Mosques are religious structures that hold significant importance in the daily lives of Muslim societies, shaping the social way of life by influencing it. There have been modifications to the structures in terms of technology, social life, and culture since the acceptance of Islam. The typology of mosques we are accustomed to today is based on conventional forms that have been kneaded through various cultural and religious stages, formed by our traditions and social lives. Although limited in number, there are also modern adaptations. The study's objective is to use semiotic analysis to read the modern mosque typologies in the context of structure, interior space, and equipment and to discover the semantic relationships in the mosque. The TBMM Mosque was selected as a case of the research in terms of its interior elements. The architectural shell and the worship space have been analyzed as a whole in terms of both Islamic philosophy and the reflection of this philosophy on mosques. Document analysis and participant observation were used as data collection in the case study on the TBMM Mosque, and semiotic analysis was used to assess the data. In this context, traditional mosque structures were examined, and the role of semiotics in architecture was explored. In light of the information given and the observations made, the case was analyzed using the semiotics method. The intended outcome is to draw attention to the functional and semantic contributions of the modern adaptation examined and to demonstrate that the architecture can be read. This study tries to understand whether the semantic and religious infrastructure that takes place in the traditional mosque typology is included in modern mosque adaptations.

Keywords: Mosque interior, Modern mosques, TBMM Mosque, Semiotics

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Extended Abstract

Introduction: The mosque form seen today has emerged over time due to religious needs and cultural habits. Although it seems to have preserved its function and form since its existence, the typology of mosques as living spaces has also changed. The domed and square plan structure tradition used in mosques in our society since the 14th century has played an important role in shaping the mosque typology (Kuban, 2016: 167). However, it is stated that neither the dome nor the minaret is mandatory elements in terms of mosque architecture (Özçakı, 2018: 466). These forms have come to the present day by loading meanings based on the interpretation of form and religion together over time. Especially in the last century, modern experiments have been made as an indicator of current architectural trends, and contemporary mosque examples have also been revealed. Semiotics is a science that strives to understand/comprehend all kinds of signs, symbols, images, objects, entities or phenomena that are shaped by sound, in short, indicators used for communication purposes. In architecture, which is a communication channel, the works produced can be analyzed with the help of semiotics (Eco, 2019: 18). Architectural buildings contain many clues about the social life, economic situation and cultural accumulation of the period in which they were built as immovable cultural assets. Semiotics can be used as a supporting element in the analysis of these signs. This research deals with the forms that are considered important in traditional mosque forms on the basis of structure - interior space - equipment. By comparing it with the examples in modern adaptations, it tries to reveal the same religious references in contemporary mosque adaptations with semiotic analysis.

Purpose and scope: This study seeks to determine whether the semantic infrastructure inherent in traditional mosque typology is present in modern mosque adaptations. First, traditional mosque typology and forms were discussed, and the relationship between form and meaning was conveyed. The next stage of the study reveals that these forms, referred to as indicators, can be interpreted through semiotics. The study explores semiotics in architecture. In the next step of the research, the Mosque of the Turkish Grand National Assembly (TBMM Mosque), one of the modern mosque adaptations, is discussed. The TBMM Mosque is a significant architectural structure, having received the Aga Khan Award for Architecture in 1995. This research emphasizes that modern mosque adaptations also carry the same religious infrastructure. The aim of the research is to employ semiotic analysis to interpret the contemporary typologies of mosques concerning structure, interior space, and equipment, as well as to discover the semantic connections within the mosque. Research becomes necessary when one considers how few modern adaptations there are.

Method: The research is a case study that aims to read the forms in the TBMM Mosque, a contemporary example, through the structure-interior space-equipment. In this study, conducted from an anti-positivist standpoint, data collection involved document review and participant observation, with the collected data subsequently analyzed using semiotic analysis. Semiotics is an analysis method that can be used to understand/comprehend architectural forms. In architectural reading, especially the perspective developed by Charles Morris is used (Okuyucu, 2018: 41). According to Morris, the formal relationship between signs, the semantic relationship of signs with their referents, and the relationship between signs and users underscore three fields of study and three dimensions of semiotics (Civelek & Türkay, 2020: 777; Parsa & Parsa, 2014: 11). These; it is specified as syntactic dimension, semantic dimension and pragmatic dimension. In the study, the Turkish Grand National Assembly Mosque was analyzed and detailed over the dimensions of architectural semiotics. In the findings section, the analysis outputs of the research are presented in three sheets. Since the research aims to read whether the same semantic and religious infrastructure takes place in modern mosque adaptations through the example of the TBMM Mosque, semiotics was found suitable as an analysis method.

Findings and conclusion: The findings of the research were conveyed through three dimensions of architectural semiotics: syntactic, semantic, and pragmatic. First, the TBMM Mosque was read one by one over three dimensions. The following conclusions were reached in the next stage when the readings were combined and evaluated with a holistic perspective. When syntactic, semantic and pragmatic readings are combined in terms of interior space, it is seen that the ceiling formed by layering replaces the perception of infinity and sky provided by the dome in the traditional mosque interior. In addition, the visual transfer of the pool, which represents the garden of paradise, to the interior with the glass qibla, has a meaning that strengthens the understanding of the “mosque”, a place of worship that connects the two worlds. The TBMM Mosque appears as a modern adaptation with the religious meaning assumed by the traditional mosque forms. When syntactic, semantic and pragmatic readings are combined in the context of equipment, TBMM Mosque, as a modern mosque adaptation, reflects the pragmatism of simplicity and religious modesty found in traditional mosque typologies. As a result, it is desired to reveal the meaning of the architectural structure by reading the indicators through semiotics. It has emerged through the reading of the indicators that the mosque bears the characteristics of traditional typology on the basis of structure, interior space and equipment. The research is important as it underlines that modern mosque adaptations can also have the semantic and religious integrity of traditional mosque typologies. This research is distinguished by the fact that it is one of the research in the field of interior architecture that combines religious structures and semiotics and it reveals the breadth of the research area of interior architecture.

Keywords: Mosque interior, Modern Mosque, TBMM Mosque, Semiotics

GİRİŞ

Erken İslam döneminde camiler, Müslümanların bir araya geldiği ve toplanma amaçlarını yerine getirebildikleri birer ibadet mekânı olarak yer edinmiştir (Karakoca, 2017: 5). İnşa edilen ilk caminin kerpiç duvarları ve hurma dalları ile örtülen bir çatısı olduğu söylenmektedir (Cansever, 2010: 52; Kuran, 2012: 36; Turani, 2000: 254). Tariflenen bu caminin fiziksel karşılığı zaman içerisinde teknoloji, sosyal yaşam ve değerler ile içinde bulunulan toplumun İslam felsefesini ele alma biçimine göre oluşmuştur. Varoluşundan beri işlevi ile formunu da korumuş gibi görünse de yaşayan birer mekân olarak cami tipolojisi de değişim göstermiştir. Toplumumuzda 14. yüzyıldan başlayarak camilerde kullanılan kubbeli ve kare plan şemalı yapı geleneği cami tipolojisinin şekillenmesinde önemli rol oynamıştır (Kuban, 2016: 167). Ancak kubbenin de minarenin de cami mimarisi açısından zorunlu ögeler olmadığı belirtilmektedir (Özçakı, 2018: 466). Bu biçimler zaman içerisinde form ve dinin birlikte yorumlanmasına dayalı anlamlar yüklenerek günümüze değin gelmiştir. Özellikle son yüzyılda, güncel mimari akımların birer göstergesi olarak modern denemeler yapılmış ve az da olsa çağdaş cami örnekleri de ortaya konmuştur. Mimari toplumsal hayatta yaşayan ve gelişen bir dil ve iletişim aracıdır. Camilerde görüldüğü üzere insanlarla çeşitli açılardan iletişim kurmaktadır. Yapıların somut bir biçimi, anlatmak istediği bir içeriği ve işlevi bulunmaktadır. Mimari, bir dil olarak göstergeler vasıtasıyla okunabilmektedir (Okuyucu, 2018: 41). Bu nedenle yapıları okuyabilmek amacıyla verilen bu değerleri, göstergebilimsel analizle incelemek mümkündür. Araştırmanın mimari nesnesi olan Türkiye Büyük Millet Meclisi (TBMM) Cami, yapı-iç mekân-donatı bağlamında sentaktik (biçimsel), semantik (anlamsal), pragmatik (yararsal) boyutlar üzerinden okunmuştur. Araştırma çağdaş bir örnek olan TBMM Cami'yi ele alan bir durum çalışmasıdır. Anti-pozitivist bakış açısıyla ele alınan çalışmada, doküman inceleme ve seçilen örnek üzerinden katılımcı gözlem veri toplama araçları olarak kullanılmış, veriler göstergebilimsel analiz ile değerlendirilmiştir.

Çalışma kapsamında öncelikle cami formunun geleneksel unsurları irdelenmiştir. Mimari kabukta en dikkat çeken kubbe, minare gibi formlar, iç mekânda mihrap, minber, süsleme gibi ögeler açıklanmıştır. Bu değerlerin kültür ve din ekseninde yeri konu edilmiştir. Araştırmanın ikinci ayağında göstergebilim, mimari açıdan ele alınmış ve sentaktik, semantik ve pragmatik işlevleri incelenmiştir. Mimari göstergebilim ele alınarak detaylandırılmış, bu noktada araştırmanın yöntemi de aktarılmıştır. Bir ibadet yapısı olarak cami mekânında yer alan unsurlar ortaya konduktan sonra modern uyarlamalardaki karşılıkları örnek inceleme üzerinden aranmıştır. Araştırmanın üçüncü adımında çalışmanın örneği olan TBMM Cami, modern bir örnek olarak ele alınan bilgiler ışığında değerlendirilmiştir. Sonuç olarak araştırma, geleneksel cami tipolojilerinde kullanılan biçimsel unsurlara yüklenen metaforları anlama çabası içindedir. Bu anlamsal çıkarımların modern tipolojilerde de karşılık bulabileceğini savunmaktadır. Örnek olarak ele aldığı TBMM Cami üzerinde bu anlamsal ilişkileri okuyarak ortaya koymaya çalışmaktadır.

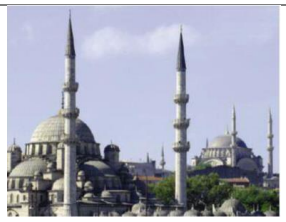
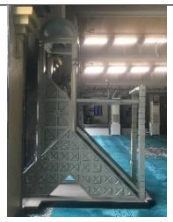
Geleneksel Cami Formları

İnsanlar tarih boyunca dini gereksinimlerini karşılamak amacıyla tapınma mekanlarına ihtiyaç duymuşlardır. Tapınaklar kültür ve coğrafyaya göre farklılaşmakta birlikte hep var olmuş, insanlar ile tanrıların bir araya gelebilecekleri mekânlar olarak önemsenmiştir. Örneğin, Mezopotamya'da karşımıza çıkan zigurat mimari, basamaklı yapısıyla gökteki tanrılar ile yeryüzündeki insanların bir araya gelebileceği bir merdivene gönderme yaparak kurgulanmıştır (Balta, 2023: 193). Tapınak yapıları zamanla tek tanrılı dinlerin evlerine evrilmiş, bunun en bilindik örneklerini ise kiliseler oluşturmuştur. Bu devşirmenin bir sebebi de dünyadaki önemli inanç sistemlerinin birçoğunun Mezopotamya, Arap Yarımadası ve Mısır bölgesi başta olmak üzere aynı coğrafyada doğması ve birbirlerinin mabetlerini kullanmaları olmuştur (Can & Yılmaz, 2008: 28). Cami yapılarında da bu en eski dini yapılardan işaretler görmek mümkündür. Tapınaklarda da camilerde de yapının üst örtüsü tanrı ile bağlantı kurma ve maneviyatı uyandırma amacı taşımaktadır (Özçakı, 2018: 464). Cami tipolojisinde yer alan kubbe, minare gibi formları daha iyi anlamlandırmak için İslam Mimarisine bakmak gerekmektedir. Yukarıda da tariflenen ilk cami bugüne ulaşmadığı için günümüze kadar gelen en eski camilere bakılmalıdır. Bu yapılar elbette İslam'ın yayıldığı Arabistan Yarımadası, Mezopotamya ve Kuzey Afrika topraklarında bulunmaktadır. Mimariyi biçimlendiren temel unsurlardan olan iklim ve coğrafya cami tipolojilerini de derinden etkilemiştir (Turani, 2000: 252). Bu unsurların yanı sıra içinde bulunulan toplumun sosyal gelenekleri de yapılar üzerinde etkili olmuştur (Aydın & Büyükşahin Sıramkaya, 2017: 68). Toplumun bütün sosyal ve duygusal gelenekleri hâkim dinin etkisi altında şekillenmektedir (Read, 2018: 59). Bu durum söz konusunu kitlenin sanatı, edebiyatı,

eğitimi, mimarisi gibi birçok unsurunu etkilemektedir. Din felsefesi ibadet edilen mekâna yansıdığı gibi yapı da içinde bulunduğu toplumdan beslenmektedir.

İklim, coğrafya ve toplumsal koşullara ek olarak yerel yapım yöntemleri ve malzemeler de cami yapısının şekillenmesi ve çeşitlenmesinde rol oynamıştır. İlk camilerde kubbe sistemine rastlanmamaktadır. İslam'ın yayılmaya başladığı coğrafyada bulunulan iklimin sıcak olması, açık ve yarı-açık alanlarının kullanımının artmasına sebep olmuş, avlu ve revaklı bahçeler cami yapılarında görülmeye başlanmıştır. Bulunulan coğrafyanın bir getirisi olarak çok kolonatlı sistemler iç mekâna yayılmış ve alanı parçalamıştır. Arabistan Yarımadası'ndan Anadolu'ya geçtiğimizde özellikle Selçuklu döneminde avlu tipolojisinin yer yer bırakıldığı görülmektedir. Türklerin fethi ile özellikle Selçuklu döneminde Anadolu'da görülmeye başlanan oymalı ahşap direkli ve çok sütunlu Ulucamiler, Orta Asya'dan gelen ve İslam kültürü ile zenginleşen bir bileşen olarak karşımıza çıkmaktadır. Bu gelenek 12.yüzyılda ilk örneklerini vermiş 13.yüzyılda yaygınlaşarak Anadolu Beylikleri ve Osmanlı dönemlerinde de toplumda kullanılmaya devam etmiştir (Kuran, 2012: 38, 264-265). İç mekânda çok kolonatlı sistemler kimi durumlarda varlığını korumuş olsa da bazı camilerde tonoz kullanımı kendini göstermiştir. Arap ve Emevi camilerinde kullanılan düz çatıların Anadolu mimarisinde farklı formlar aldığı izlenmiştir (Turani, 2000: 252-276). İslam mimarisinde karşılaşılan bütün bu unsurlar değerlendirildiğinde bir kez daha görülmektedir ki; kültür, toplumsal gelenekler, coğrafya, iklim, mühendislik gibi konular yapıları derinden etkilemiştir. Aynı zamanda İslam'ın yaygınlaşması ile Müslüman sayısının artması da yapı formunda değişiklikleri doğurmuştur. Örneğin ezanın yüksekten okuması ihtiyacı ile minare formu, vaaz verenin görünmesi isteği ile minber formu cami tipolojilerinde yer edinmiştir (Tablo 1) (Aydın & Büyükşahin Sıramkaya, 2017: 70).

Tablo 1. Camilerde yer alan biçimsel unsurlara örnekler

Öge	Örnekler	
Kubbe (Üst Örtü)	 İstanbul Yeni Cami & Nuruosmaniye Cami	 Erzincan Terzibaba Cami
Minare	 İstanbul Sancaklar Cami	 Edirne Üç Şerefeli Cami
Mihrap	 Büyük Kordoba Cami- İspanya	 Ankara TBMM Cami
Minber	 Ankara TBMM Cami	 İstanbul Kılıç Ali Paşa Cami

Kubbe, bir üst yapı örtü sistemi olarak gökyüzünü temsil etmektedir (Cansever, 2010: 61; Gündüz Küskü, 2014: 161) (Tablo 1). Manevi bir boyutta anlam yüklenen bu form, geniş açıklıkları geçmek için kullanılan bir tekniktir (Kuban, 2016: 167). Kubbe toplu mekân yaratma gereği ile doğan teknik bir başarı olmasının yanı sıra merkezi mekân oluşumunu da karşılamaktadır (Gündüz Küskü, 2014: 161). Aynı zamanda camiler, uzak mesafeden dikkat çekmesi gereken bir yapı olarak, kubbenin sağladığı farklılaşmayı sahiplenmiştir. Eski dönemlerde yapılan camiler incelendiğinde etrafındaki yapılardan kubbesi ile farklılaştığı ve dikkat çektiği not edilmektedir (Cansever, 2012: 201; Özçakı, 2018: 463). Kubbe formunun dinsel bir öge değil, kültürel bir yansıma ya da bir seçim sonucu kullanıldığı belirtilmektedir. Mimar Sinan'ın kubbeleri ise mühendislik bilgisi sonucunda üretilen dönemin önemli bilimsel gelişmelerinden birisi olarak karşımıza çıkmaktadır.

Camilerde yer alan bir diğer önemli figür olan minare, namaz vaktinin halka duyurulması amacıyla yüksek bir noktadan ezanın okunması için eklenen bir formdur (Kişmiroğlu & Anıktar, 2023: 87) (Tablo 1). Günümüzde teknoloji yardımıyla ezanın duyurulması çok daha kolay bir şekilde yapılabildiği için minare sadece sembolik bir görev üstlenmektedir (Karakoca, 2017: 9). Minare incelendiğinde camilerden bağımsız gelişen bir form olduğu ortaya çıkmakta, ulucami geleneğinde yapıdan ayrı konumlandırıldığı görülmektedir. Minarenin camiye eklemlenmesi 16. yüzyılda görülmekte günümüz minare formu ise 18. ve 19. yüzyıla dayanmaktadır (Kuban, 2016: 167). Cami mimarisi incelendiğinde kubbe, minare gibi günümüzde sembolik anlamlar içeren formlardan önce genel hacim üzerine yoğunlaşıldığı görülmektedir (Turani, 2000: 254-255). Minare formu cami mimarisinde daha sonra ortaya çıkmış, kültür-iklim-coğrafya ekseninde şekillenmiştir (Karakoca, 2017: 9). Osmanlı dönemi camilerine bakıldığında minarenin sosyal birtakım göstergeleri olduğu da bilinmektedir. Örneğin, İstanbul Sultanahmet Cami minarelerinde Sultan I. Ahmet'in 16. padişah olmasına bir gönderme olarak toplam 16 adet şerefe bulunmaktadır (Özçakı, 2018: 466). Bir ibadet yapısı olan caminin genel formunun Emevîler döneminde oturmaya başladığı görülmektedir (Turani, 2000: 252). Sonraki dönemlerde çeşitli İslam devletlerinde kültürel, coğrafi, iklimsel değerler üzerinden şekillenerek gelişmiştir. Bu noktada kubbe, minare, minber, mihrap gibi ögelerin sonradan eklendiği görülmektedir (Karakoca, 2017: 10-11). Namaz kılarken secde edilen Mekke yani Kabe'nin bulunduğu yöne bir niş konularak bu alan belirginleştirilmiştir (Kişmiroğlu & Anıktar, 2023: 86). Mekânın odak noktalarından olan bu bölüm mihrap adını almış, sonraları üst kısmı bir kubbe ile belirginleştirilerek görünürlüğü artırılmıştır. Cami iç mekânında görülen mobilyalardan biri olan minber, çoğu zaman mihrabın yanında yer almaktadır (Tablo 1). Minberin temel amacı, vaaz veren kişinin üzerine çıkarak sesini daha net ve uzağa duyurabilmesidir (Karakoca, 2017: 7; Kişmiroğlu & Anıktar, 2023: 87). Bu durum formun işlevsel bir amaçla oluştuğunu göstermektedir.

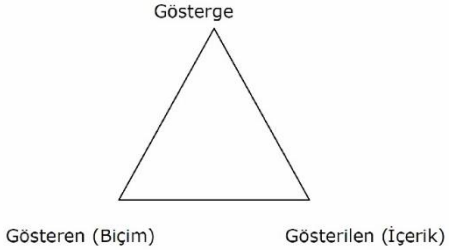
Camilerde İslam felsefesinin bir yansıması olarak dış kabuk ile iç mekânın bir bütün olarak ele alınması yaklaşımı uygun karşılanmaktadır. Mütevazı, aşırıya kaçmadan, abartmadan ve nesneye insanı küçük hissettirecek güç atfetmemek İslam mimarisinde önemli görülen değer yargılarıdır (Cansever, 2012: 153-154, 202). Cami mimarisinde bu değer yargılarını korumak, İslam felsefesinin yansımasını sağlamak adına önemlidir. Dış görünüşü ile insanı etkilemesi beklenen camilerin iç mekân özellikleri ile de aynı etkiyi yaratması, donatı ve süslemelerinde aşırıya kaçıp rahatsızlık vermeden yapı ile ahengi yakalaması beklenmektedir (Özkafa, 2018: 309). Öyle ki İslam mimarisi incelendiğinde öneme vurgu yapmaktan kaçınmak ve kendi gibi göstermek adına malzemeyi olduğu haliyle kullanma yaklaşımı yer almaktadır (Cansever, 2010: 28). Camilerde içeriye temiz ayakla girilmesi gereği, yapının oluşturulması ve iç mekân düzenlemesinde temel etken olmuştur. Dolaşım ve sirkülasyon aksları bu ihtiyaca göre şekillenmektedir. İç mekâna dair en önemli unsurlardan biri ayakkabıların muhafaza edildiği birimlerdir. Camiye temiz ayakla girilmesinden kaynaklı bütün iç mekân halı ile kaplanmaktadır. Bu halıların bir dekoratif unsur olarak iç mekânda kullanılan çini ve bezemelerle uyumlu olması beklenmektedir. Camilerde atmosfer oluşmasında en önemli unsurlardan bir diğeri aydınlatma olmaktadır. Yapının dış cephe aydınlatması onu etkileyici ve ahenkli kılmakla beraber aynı zamanda camiyi ortaya çıkarmalıdır. Dış cepheyle birlikte iç mekânda kullanılan aydınlatma unsuru da büyük önem taşımaktadır. Cami kubbelerinde yer alan büyük avizelerin estetik bir değer taşıyıp yapının felsefesini yansıtması önemli görülmektedir (Özkafa, 2018: 313). Halı, minber, rahleler, kitaplıklar, ayakkabılıklar, aydınlatma elemanları gibi birçok unsur günümüzde cami iç mekânında yer alan ve ister istemez mekânla ilişkilenen ögelerdir. Bu unsurların estetik değerleri yapı ve iç mekân bütünleşmesinde ve uygun atmosferin oluşturulmasında etkili olmaktadır.

Nüfus artışı gibi sosyal bir gerçek, İslam'da neredeyse ilk iki yüzyıl boyunca hâkim olan cemaatin aynı camide toplanması gerektiği görüşünü değiştirmiştir (Aydın & Büyükşahin Sıramkaya, 2017: 71; Fidan, 2016: 208). Sonuçta camilerin boyutlarında ve tiplerinde çeşitlilik yaşanmaya da başlamıştır. Elbette bu çeşitlilik, bölgelerin iklim ve coğrafi yapısı ile toplumların sosyal, kültürel ve ekonomik durumlarına paralellik göstermiş aynı zamanda teknolojik gelişmelere de ayak uydurmak durumunda kalmıştır. Tipolojiyi etkileyen bütün bu parametreler, İslam felsefesi ile yoğurularak camilerde biçimsel, anlamsal ve işlevsel değerlere dönüşmüştür. Göstergebilim, biçim üzerindeki anlamı ortaya koyma üzerinde çalıştığı için bir yapı tipi olan camilerdeki bu değerleri okuyabilmek amacıyla kullanılması da mümkündür. Cami tipolojisi üzerinde bulunan bu göstergelerin modern örneklerde de yer alıp almadığı göstergebilim analizi ile okunabilmektedir.

Mimari Göstergebilim

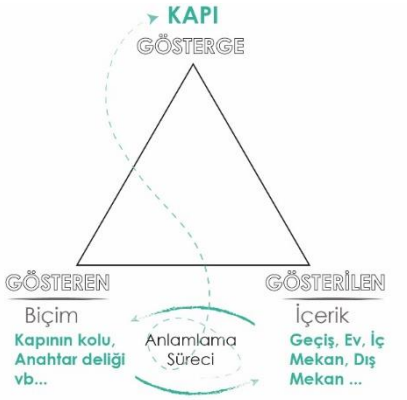
İnsanlık tarih boyunca anlama uğraşı içerisinde olmuştur. Etrafında olan olayları, yapılan nesneleri, sanat eserlerini, kendi yarattığı ya da etrafında yaratılmış olanları anlama/kavrama çabasındadır. 20. yüzyılda ön plana çıkan göstergebilim de bu anlama çabasını her yönüyle ele alan bir disiplin olmuştur (Güneş, 2013: 75). Göstergebilim, işaret üreten her alanda, üretilen işaretler ile aralarındaki anlam ve anlam örüntüleri üzerinde çalışmaktadır (Sebeok, 2001: 5-8). Konusu itibariyle birçok disiplin tarafından kullanılabilecek bir altyapıya sahip olan göstergebilim, mimarlık ile de ilişkilidir (Ekici, 2021: 245; Civelek & Türkay, 2020: 772; Sebeok, 2001: 61). Bir iletişim kanalı olan mimarlıkta, üretilen yapıtlar göstergebilim yardımıyla çözümlenebilir (Eco, 2019: 18). Mimari yapılar taşınmaz kültür varlıkları olarak yapıldıkları dönemin sosyal yaşantısı, ekonomik durumu ve kültürel birikimi ile ilgili birçok ipucu barındırır. Barındırdıkları bu işaretlerin çözümlenmesinde göstergebilim yardımcı bir unsur olarak kullanılabilmektedir.

Göstergebilimden bahsetmek için öncelikle göstergenin ne olduğuna bakmak gerekmektedir. Gösterge, iletişim amaçlı kullanılan her türlü işaret, simge, görüntü, ses üzerinden şekillenen nesne, varlık ya da olgudur (Parsa & Parsa, 2014: 1; Sebeok, 2001: 5-6). Burada önemli olan unsur göstergelerin iletişim kanalında kullanılmasıdır. İnsanların bir şeyi anlatmak, aktarmak, kavramak ya da kavratmak amacıyla kullandıkları, oluşturdukları birimlerdir (Ataş, 2008: 101). Göstergebilimin dil ile olan ilişkisi daha eskilere dayanmasına rağmen resim, heykel, mimari gibi görerek okunabilen görsel tarafı 20. yüzyılın ikinci yarısından itibaren etkin olmuştur (Eco, 2019: 13; Güneş, 2013: 77-78; Morris, 1939: 131). Mimarlık da görerek okunan bir iletişim yolu olduğu için bünyesinde yer alan göstergeler, açıklanan yöntemle analiz edilebilmektedir. Bir anlamı, verici ile alıcı arasında taşımak, iletişim kurma amacı taşıyan göstergenin temel görevi olarak tanımlanmaktadır. Dilsel ya da dil-dışı olsun vericiden alıcıya aktarılan her iletim, alıcıda bir izlenim bırakmaktadır. Bir görsel gösterge olan mimari unsurların da alıcısı üzerine bıraktığı izlenimler bulunmaktadır. Diğer görsel göstergelerde olduğu gibi mimaride de göstergebilimin düz anlam/yan anlam kavramları dikkat çekmektedir (Okuyucu, 2018: 41). Alıcının göstergeden edindiği düz (birincil) ve yan (ikincil) anlamlar mevcuttur (Eco, 2019:10-11; Parsa & Parsa, 2014: 43). Düz anlam mimari ögenin kullanıcı üzerinde bıraktığı ilk etki olmaktadır. Söz konusu ögenin biçimsel ve temel işlevsel özelliğinden bahsedilmektedir. Yan anlam ise birincil anlamdan yola çıkarak oluşturulan simgesel bir yansıma olmaktadır. Düz anlam (birincil) üzerinden yan anlam (ikincil) okuması yapılırken, okumayı yapanın kültürel ve sosyal kodları da devreye girmektedir. Düz anlam ve yan anlam arasında bir üstünlük ya da önem sırası bulunmamaktadır (Eco, 2019: 35). Mimari ögelerin bu anlamları göstergeler aracılığı ile çözümlenebilmektedir (Güneş, 2013: 80). Sonuç olarak göstergebilim, göstergelerin biçimleri ile içerikleri arasındaki bağı sorgulayarak göstergenin kavranmasına yardımcı olmaktadır. Göstergenin kavranması, onun tariflediği nesne, varlık ya da olgunun kavranması/okunması/çözümlenmesine imkân sağlamaktadır. Bütün bu anlamlama çabası göstergebilimin temelini oluşturmaktadır.



Görsel 1. Gösterge Şeması

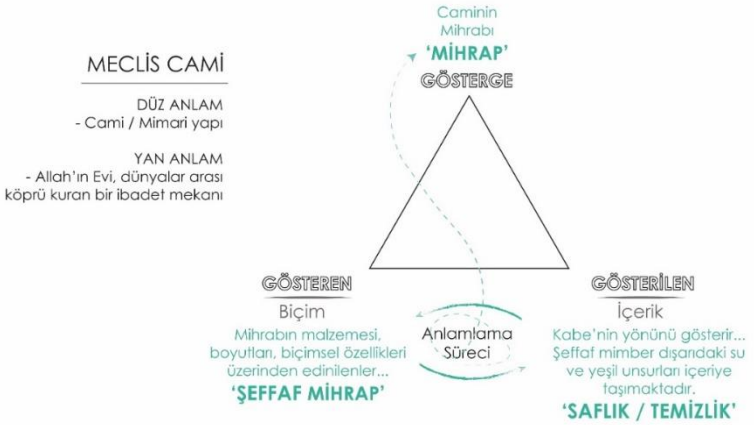
Gösterge için biçim ve içerikten meydana geldiği söylenmektedir (Görsel 1). İnsan biçim kanalıyla içeriği anlama eğilimindedir. Bir göstergenin öncelikle biçimini görür, bunu algılayabildiği zaman içeriğini de okumaya başlar. Biçim ile içerik ilişkilendiğinde anlamlama gerçekleşmektedir. Bu anlamlama süreci yani biçim (gösteren) ile içeriğin (gösterilen) bağ kurması göstergenin kavranmasına yardımcı olmaktadır (Okuyucu, 2018: 40-41). Söz konusu bağın kurulması, anlamlamanın gerçekleşmesi, mimari ögelerin okunmasında yardımcı bir etken olmaktadır.



Görsel 2. Anlamlama süreci

Görsel 2'de verilen örnek üzerinden gösterge şeması okunabilmektedir. Her tür mimari nesne birer gösterge olarak sayılabilmektedir. Okumaya dair bir örnek vermek gerekirse; kapı bir gösterge olarak ele alındığında, kapının biçimsel özelliğini tanımlayacak her tür unsur onun göstereni sayılmaktadır. Kapının kolu ya da anahtar deliği gibi gösterenleri biçime dair fikir vermektedir. Bu fikirler kapının gösterileni (içeriği) ile ilişki kurduğunda anlamlama süreci yaşanmaktadır. Kapının gösterenleri yani biçimsel unsurları, gösterilene yani içeriğe ulaştırmaktadır. Kapının geçişi ifade etmesi, mekânları birbirine bağlaması gibi içeriğe dair ipuçları edinilir. Sonuçta kapının biçimi ile içeriği ilişkilendiği zaman gösterge olan kapı kavranabilir. Bu anlamlama süreci biçim ve içerik bağının oluşmasında yardımcı olmaktadır. Bu sayede göstergeye yani mimari unsura dair okuma mümkün kılınmaktadır.

Mimari ögeler üzerindeki anlamları (düz anlam/yan anlam) çözümleyebilmek, diğer bir deyişle anlamlayabilmek adına göstergeler ve göstergebilimin boyutlarından yararlanılmaktadır. Yukarıda aktarılan irdeleme TBMM Cami üzerinde tekrar yapılmıştır (Görsel 3). Cami, ilk bakışta dini ibadetlerin yerine getirildiği bir mimari yapı olarak göze çarpar. Bu cami yapısının düz anlamı olmakta birlikte bu mimari yapının bir de yan anlamı bulunmaktadır. Camiler Allah'ın evi, bu dünya ile öbür dünyayı birbirine bağlayan birer köprü gibi çeşitli sembolik anlamlar taşıyabilmektedir. Bu sembolik anlamlar caminin yan anlamlarını oluşturmaktadır. Bu anlam zinciri arasındaki çözümlemelere, mimari yapıya ait göstergeleri okuyarak ulaşılabilir. Camiye ait unsurların hepsi gösterge/gösteren/gösterilen üçgeninde okunabilmektedir. TBMM Cami'de yer alan mihrap buna bir örnek olarak Görsel 3'te ele alınmıştır.



Görsel 3. TBMM Cami göstergebilimsel çözümleme örneği

Buna göre bir iletişim aracı olan mimari unsurları da göstergeler üzerinden okuyarak anlamlandırmak mümkündür. Mimarlık göze hitap eden biçimsel unsurlara yüklediği mesajlar sayesinde insanlarla iletişim kurmaktadır. Bu mesajları okuyarak yapılardaki anlamsal ilişkileri çözmek mümkündür.

YÖNTEM

Göstergebilim alanında okuma yapılmasını kolaylaştırmak adına özellikle Charles Morris'in geliştirdiği yöntem mimarlık adına kullanılmaktadır (Okuyucu, 2018: 41). Morris'e göre, göstergelerin arasındaki biçimsel ilişki, göstergelerin belirttiği şey ile anlamsal ilişkisi ve gösterge ve kullanıcı arasındaki ilişki üç çalışma alanını, göstergebilimin üç boyutunu vurgulamaktadır (Civelek & Türkay, 2020: 777; Morris, 1939: 132-133; Parsa & Parsa, 2014: 11). Bunlar; sözdizimsel/biçimsel (sentaktik) boyut, anlambilimsel (semantik) boyut ve edimbilimsel/yararsal (pragmatik) boyut olarak belirtilmekte ve mimari okumalarda da kullanılmaktadır. Morris tarafından öne sürülen üç ilişki, göstergebilimde anlamlama sürecinde okuması yapılan boyutlar olarak da karşımıza çıkmaktadır (Morris, 1938: 43; Morris, 1939: 132-133). Mimari göstergebilimi anlamlandırma yolculuğunda ele alınan söz konusu boyutlar, 20. yüzyılın ikinci yarısında ortaya atılmış, günümüze kadar kullanılagelmiştir (Görsel 4). Bu boyutlar mimari ögeyi incelerken bize sistematik bir yol çizmekte, bir nevi anlamlama/kavrama sürecini rasyonalize etmektedir.

Görsel 4. Anlamlama sürecinin boyutları

Göstergebilim köken itibariyle dil araştırmalarından çıktığı için ilk boyutu biçimsel ifadeyi işaret eden sözdizimsel boyut olarak adlandırılmıştır (Morris, 1938: 13). Diğer bir ifade ile sentaktik boyut, göstergelerin bir araya gelme şekillerini, aralarındaki bağları ve ilişkileri incelemektedir (Parsa & Parsa, 2014: 11; Rochberg-Halton & McMurtrey, 1983: 148; Yazar & Geçen, 2019: 209). Sentaktik boyut, anlamlandırılacak göstergenin tasarımında kullanılan her tür ögenin biçimsel perspektiften okunmasıdır (Okuyucu, 2018: 41). Nokta, çizgi, düzlem gibi temel tasarım elemanlarının zıtlık, denge, bütünlük, ritim gibi tasarım ilkeleri ışığında çözümlenmesi sentaktik okumaya girmektedir. Bir anlamda çözümlenecek olan görsel nesnenin, biçimsel özellikleri üzerinden sadece estetik anlamda incelenmesi demektir. Bu nedenle tasarımın sentaktik boyutu, estetik işlevi olarak da geçmektedir (Alpak vd., 2018: 13). Ögelerin tasarım ilkeleri ışığında biçimsel olarak incelenmesi ile göstergenin sentaktik boyutu çözümlenebilmektedir.

Göstergenin semantik boyutu, gösterileniyle yani içerik ile olan anlamsal ilişkisine dayanmaktadır. Anlambilimsel boyut, göstergenin işaret ettiği nesne ile arasındaki ilişkiyi mercek altına alırken anlamı sorgulamaktadır (Morris, 1938: 21; Parsa & Parsa, 2014: 11; Rochberg-Halton & McMurtrey, 1983: 148; Yazar & Geçen, 2019: 209). Her gösterge iletişim amacı taşıdığı için iletmek istediği bir mesaj barındırmaktadır. Görsel göstergelerin başında gelen mimari elemanlar da anlam taşımakta, bunu kullanıcısına iletme çabası içinde olmaktadır (Alpak vd., 2018: 13). Burada göstergenin iletmek istediği anlam, gösterilenin semantik boyutunu oluşturmaktadır. Anlamsal çıkarım, göstergenin içinde bulunduğu kültürel altyapıdan bağımsız düşünülmemelidir. Semantik boyut göstergenin yan anlamıyla daha çok ilişkilenmektedir (Okuyucu, 2018: 42).

Pragmatik boyut ise göstergenin kullanıcı ile olan ilişkisine odaklanmaktadır (Rochberg-Halton & McMurtrey, 1983: 148). Edimbilimsel olarak da ifade edilen boyut, göstergelerin kullanımını ve etkilerini davranışlar

çerçevesinde incelemektedir (Parsa & Parsa, 2014:11; Yazar & Geçen, 2019: 209). Anlamlama sürecinin pragmatik boyutunda kullanıcının gösterge ile olan her tür ilişkisine bakıldığı gibi davranışlarına olan etkisi de mercek altına alınmaktadır (Okuyucu, 2018: 42). Tasarım sürecinin temel girdilerinden birisi ortaya çıkan ürünün fonksiyonel olabilmesidir. Ürünün kullanıcı ile ilişkisi her zaman ön planda ve tasarıma yön veren temel unsur olarak karşımıza çıkmaktadır. Mimari göstergelerde pragmatik boyut önemlidir çünkü her yapı kullanıcısı ile işlevsel bir ilişki içerisine girmektedir.

Mimari göstergebilimde sentaktik, semantik ve pragmatik boyutlar anahtar kavramlar ile ilişkilendirildiğinde Tablo 2 ortaya çıkmaktadır. Ortaya konan anahtar kavramlar mimari ögelerin okunmasında yardımcı birer unsur olarak kullanılabilecek potansiyele sahiptir. Aynı zamanda göstergebilim boyutlarının mimari ile olan ilişkisinin anlamlandırılmasında fayda sağlayacağı düşünülmektedir. Bahsi geçen anahtar kelimeler biçimsel-anlamsal-yararsal analizler üzerinden artırılabilir.

Tablo 2. Anlamlama süreci alt başlıklarında anahtar kelime örnekleri

Sentaktik (Biçimsel)	Semantik (Anlamsal)	Pragmatik (Yararsal)
Geometri	Kavramsal / Bilişssel	Kullanım Amacı
Strüktür	Özellikler	İşlev
Kütle	Kimlik	Davranış
Estetik	İmaj	Gereksinimler

Camiler sosyo-kültürel yaşantıyı, yeri geldiğinde toplumun düşünce yapısını gösteren birer simgedir. İslam felsefesinin toplum düşünce yapısındaki yerinin mekânsal yansıması olan bu dini yapılar birer gösterge olarak okunabilmektedir. Yukarıda açıklanmaya çalışılan nokta, her göstergenin belli bir sistematik ilişki ile çözümlenebileceğidir. Mimari de bir görsel gösterge olarak aynı sistemle okunabilmektedir. Bu okuma belli görüşler altında rasyonalize edilmiş, öğrenilebilir olduğu ortaya atılmıştır. Adımları ve boyutları ortaya konan bu görüşlerin mimari bir okuma ile örneklenmesi hedeflenmiştir. Bu nedenle okuma için hem biçimsel hem anlamsal yansıması güçlü, dini bir yapı olan "cami" tercih edilmiştir. Günümüz çağdaş cami tipolojisinin en önemlilerinden biri haline gelen TBMM Cami bu çerçevede değerlendirilmiş ve örnek bir okuma yapılmıştır.

Nitel araştırma, bu dünyadaki karar, davranış, inanış ve değerler gibi sosyal olguları kendi bağlamında anlama ve açıklamayı amaçlayan yöntemdir. Çoğunlukla sosyal ve beşerî bilimlerde kullanılan nitel araştırma, merkezine insanı koyarak anlama ve yorumlama çabasına girmektedir (Güçlü, 2019: 17-19). Bu araştırmada da geleneksel cami tipolojilerinde yer alan formlar incelenerek modern uyarlamalarındaki aktarımların aynı anlamsal bütünlüğü karşılayıp karşılamadığı ortaya konmak istenmiştir. Çalışma, modern bir uyarlama olarak TBMM Cami'de yer alan formları yapı-iç mekân-donatı bağlamında okumayı amaçlayan, anti-pozitivist bakış açısı ile yürütülen bir durum araştırmasıdır. Araştırmada veri toplama yöntemi olarak doküman inceleme ve katılımcı gözlem, analiz aracı olarak göstergebilim kullanılmıştır. İletişim amaçlı her türlü işaretin anlamlandırılması ile uğraşan göstergebilim, bir analiz yöntemi olarak da kullanılmaktadır. Özellikle içerik analizi sürecinde kullanılan göstergebilim, işaretler ve onlarla ilişkilenen anlamların çözümlenmesine yönelik bir çalışma alanıdır (Babbie, 2013: 217). Araştırmada Morris tarafından öne sürülen göstergebilimin üç boyutu, sentaktik-semantik-pragmatik, çözümleyici olarak kullanılmıştır. Mimarlık gibi dil-dışı görsel göstergelerin çözümlenmesinde Morris'in geliştirdiği model sıklıkla ele alınmaktadır (Fan, 2006: 122). Araştırmanın örneği olan TBMM Cami, yapı -iç mekân- donatı özelinde göstergebilimin sentaktik-semantik-pragmatik boyutları üzerinden incelenmiştir.

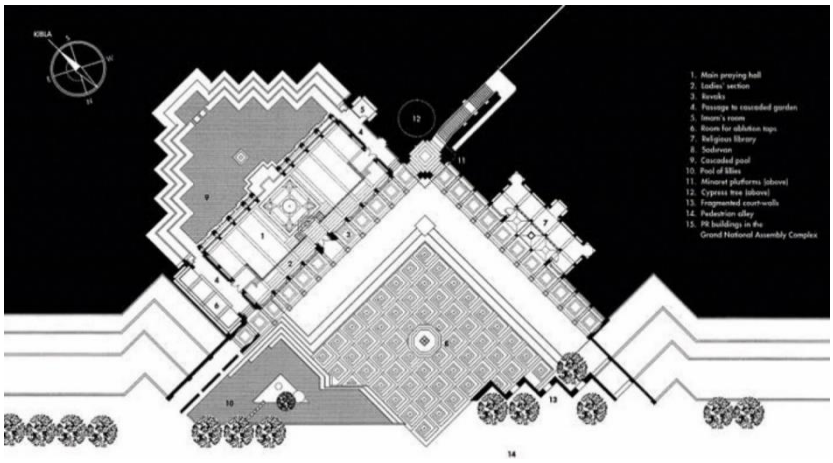
TBMM Cami

Türkiye Cumhuriyeti'nin üçüncü meclis yapısının yer aldığı TBMM kompleksi, Clemens Holzmeister tarafından 1937-61 yılları arasında tamamlanmıştır. 1984 yılında milletvekilleri ve meclis çalışanları için yerleşkeye Halkla İlişkiler Binası eklenmiştir. Bu ekleme Behruz Çinici tarafından gerçekleştirilmiş, meclis binasının güneyine konumlandırılmıştır. Ofis kompleksinin bir uzantısı olarak cami, 450 adet çalışanın kullanımı amacıyla istenmiş, 1987-89 yılları arası aynı mimarlık ofisi tarafından tamamlanmıştır (Görsel 5). TBMM Cami ya da Meclis Cami adıyla anılan yapı, 1995 yılında Ağa Han Mimarlık Ödülünü kazanmıştır (Aga Khan Development Network, t.y.; TRT2, 2019). Ağa Han Mimarlık ödülleri 1975 yılında kurulan Ağa Han Vakfı tarafından İslam ülkelerinde mimariyi ele almak amacıyla oluşturmuş bir platformdur. Burada

önemli nokta, İslam coğrafyasında toplumu ve sosyo-kültürel yapıyı destekleyerek gelişmesinde ön ayak olan mimari yapıların teşvik edilmesidir (Cansever, 2012: 161). Günümüzde meclis binasının güneyinde yer alan Halkla İlişkiler Binası yıkılmış, TBMM kompleksinin güney ucundaki cami yapısı varlığını korumaktadır.

Görsel 5. TBMM Cami

Cami kompleksi, üçgen plana sahip bir ön avlu ile bu üçgenin bir kenarına sabitlenmiş ibadet mekânı ve öbür kenarına sabitlenmiş bir kütüphaneden meydana gelmektedir (Görsel 6). Yapının ana teması mütevazılık olarak ön plana çıkmaktadır. Bu bağlamda yapı kota gömülmüştür. İlk cami yapılarında minare olmadığı göz önünde bulundurularak camiye minare yerine simgesel bir ağaç konumlandırılmıştır. Kubbe yerine katlı, zigurat mantığını andıran bir tavan sistemi kullanılmıştır. Bu üst örtü sistemi tanrı ile yeryüzündeki insanın bağ kurma ve maneviyatı uyandırma amacını da yansıtmaktadır (Özçakı, 2018: 464). Yapının tasarımı 1985-87 yılları arası sürmüş, bu süreçte cami yapısı ve TBMM kompleksinin mimari dili üzerine araştırma yürütülmüştür (Akçal, 2002: 91). Bu dönemde özellikle klasik Osmanlı cami figürlerindeki bütün mimari elemanlar tek tek ele alınmıştır. Neden yapıldıkları ve şimdi nasıl ele alınmaları gerektiği üzerine derinlemesine iki senelik bir araştırma ve tasarım süreci yaşanmıştır (TRT2, 2019).



Görsel 6. TBMM Cami planı

Plan bazında değerlendirildiğinde 6400 m2'lik bir alana yayılan cami kompleksi, üç ana bölümden meydana gelmektedir. Bunlar, üçgen avlu, önünde uzanan dörtgen hacimli bir ibadet mekânı ve üçgen biçimli bir arka bahçedir. Çevre yapıların yönlenişi ve kıbleden kaynaklı farklı aksların bir araya gelişi üçgen formlar kullanılarak dengelenmeye çalışılmıştır (Aga Khan Development Network, t.y.). Kıble cephesi cam ile kurgulanmış bu sayede arka bahçe iç mekâna akabilmiştir. Su ve yeşil unsurların kullanıldığı arka bahçe ölüm sonrası dünyayı, ön bahçe dünyevi hayatı, ibadet mekânı ise iki dünyanın eşiğini oluşturmaktadır (Akçal, 2002: 91) (Görsel 7).

Görsel 7. TBMM Cami arka bahçe ve iç mekân

Gerek cami yapısının geleneksel unsurlarının yorumlanışı gerek kullanılan su ve yeşil ögelerin mekân içerisindeki yerleri ele alındığında, yapının ardında yatan düşünsel bir plan olduğu görülmektedir. Bir ibadet mekânı olarak 'cami' yapısı detaylıca irdelenmiştir. İslam felsefesinin mimari kabuk ve iç mekâna nasıl yansıyabileceği düşünülmüştür. Geleneksel cami tipolojisinde yer alan formlar, ele alınan modern uyarlamadaki yansımaları ve yapının ardında yatan bu değerlendirmeler görsel göstergebilim ile çözümlenmeye çalışılmıştır. TBMM Cami, sentaktik, semantik ve pragmatik boyutlarıyla ele alınarak, göstergebilimsel analize tabi tutulmuştur.

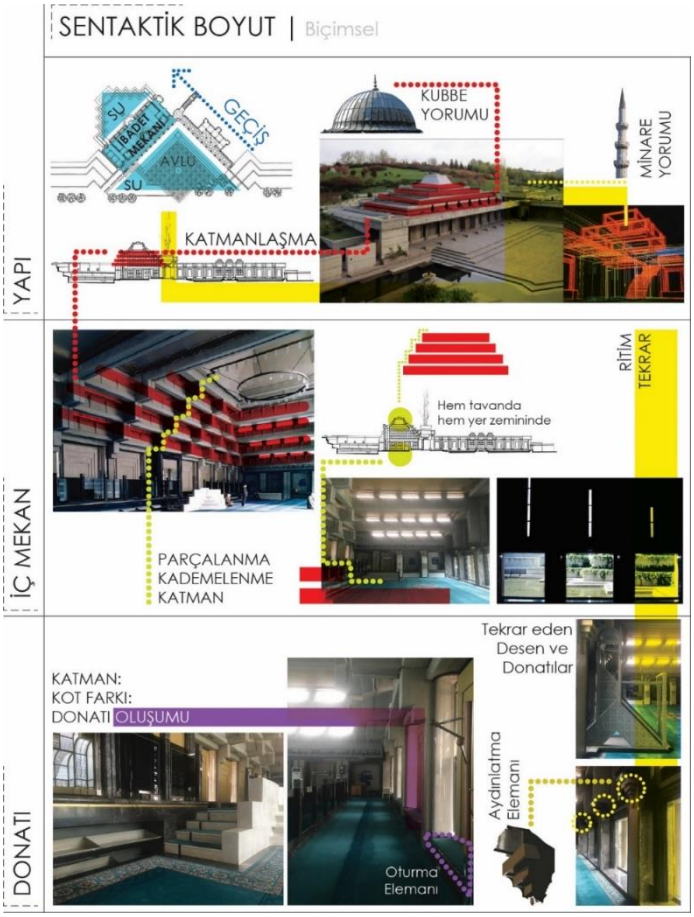
BULGULAR

Mimari yapının öne sürdüğü düz anlam ve yan anlamı ortaya koymak, okuyabilmek ve anlamlandırabilmek adına göstergebilimsel analiz yapılmıştır. Göstergenin, gösteren (biçim) ve gösterileni (içerik) arasındaki anlamlama süreci Görsel 4'te verildiği üzere belli başlı boyutlar üzerinden okunmaktadır. Bunların başında göstergenin biçimsel özelliklerinin değerlendirildiği sentaktik (biçimsel) boyut gelmektedir. Ardından biçimin anlamsal okumasının yapıldığı semantik (anlamsal) boyut ile davranış ve fayda üzerine pragmatik (yararsal) boyut gelmektedir. Görsel 8, 9 ve 10'da TBMM Cami'nin görsel okumalarının yapıldığı paftalar verilmiştir. Görüldüğü üzere okuması yapılan her bir boyut yapının genel kütlesel özellikleri, ibadet iç mekânı ve donatı, süsleme bakımından irdelenmiştir. Aslında yapı, iç mekân ve donatı olarak adlandırılan bu üç bölümün, paftalar incelendiğinde birbirine aktığı görülmektedir. Bu üç kıstas yapı tasarımının ayrılmaz birer parçasıdır. Sadece okumayı sistematize edebilmek amacıyla adım adım listelenmiştir.

Çalışmanın örneği ilk olarak sentaktik boyut olan biçimsel kıstaslar üzerinden değerlendirilmiştir. Görsel 8'de sunulan şema, TBMM Cami'nin yapı- iç mekân- donatı bazında sentaktik okumasıdır. Şemada yer verilen unsurlar şu şekilde özetlenebilir:

- Plan düzleminde, cami avlusundan iç mekân ve su ögesine kademeli bir geçiş görülmekte, su ögesi yapının en iç kesiminde yer almaktadır.
- Yapı boyutunda incelenen camide katmanlaşma göze çarpmıştır. Bu katmanlaşma klasik cami formundaki kubbenin yerine gökyüzünü ifade etmekte, kademeli olarak göstermektedir.
- Yapı bazında minare yerinde de katmanlaşma göze çarpmıştır. Hoparlör sisteminin geliştirilmesiyle ses dağıtım işlevi kalmamış olan minare yerine selvi ağacı kullanılmıştır.
- Cami iç mekân boyutunda incelendiğinde kubbe düzleminde kademeli yapı okunabilmektedir.
- İç mekân düzleminde ele alınan katmanlaşma hem tavan hem zemin hem de yüzey düzlemlerde bir ritim olarak kendini göstermektedir.
- Yer düzleminde kot mevcuttur. İç mekâna girildiğinde, dini ritüelin gerçekleştirildiği düzleme bir kot aşağı inilerek ulaşılmaktadır, kademeleşme biçimsel olarak burada da gözlenmektedir.
- Cami kubbesinde yer alan aydınlatma elemanı olan büyük avize de biçimsel olarak mekânla uyum içerisinde tasarlanmıştır. Bu noktada iç mekânda kullanılan tasarım unsurlarının ve de mobilyaların biçimsel ilişkisi görülebilmektedir.
- İç mekânda kullanılan kot farkı donatı oluşumu amacıyla kullanılmıştır. Giriş kısmında yer alan üst kotta, pencerelerin aralarında yer alan ara mekânlar oturma elemanı olarak değerlendirilmiştir.

- Alt kota inerken kullanılan düşey düzlem iç mekânda ayakkabılık olarak kullanılabilen bir donatıya dönüşmüştür.
- Mekânda kullanılan donatı ve ürünlere bakıldığında katmanlaşma ve kademeleşme tekrar unsuru olarak ele alınmıştır. Aydınlatma elemanlarında, oturma elemanlarında ve diğer donatı unsurlarında tekrar kendini biçimsel olarak göstermektedir.

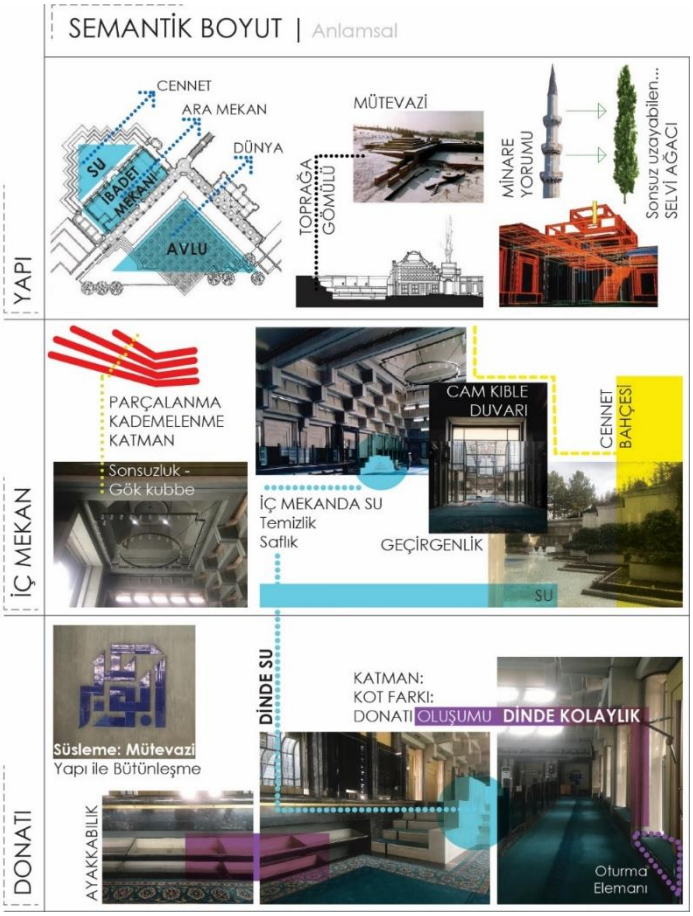


Görsel 8. TBMM Cami sentaktik okuma paftası

Yapının biçimsel analizleri, semantik boyutta okunabilen ipuçlarına dönüşmüştür. Görsel 9'da okunan semantik analiz, yapı- iç mekân- donatı bazında ele alınmıştır. Şemada yer verilen unsurlar şu şekilde özetlenebilir:

- Yapı düzleminde görülen avlu – cami – su ögesi geçişi anlamsal boyutta dünyadan öte dünyaya geçişi simgeleyecek şekilde kademeli olarak konumlandırılmıştır.
- Yapının bütününün kotta yer alması, İslam dininin mütevazı yapısının biçimsel dışa vurumu olarak anlamlandırılabilmektedir. Aynı zamanda toprakla ve yer küre ile bütünleşme ve konsantrasyona gönderme yapmaktadır.
- Biçimsel olarak minare formu yerine kullanılan selvi ağacı, uzayabilen doğal bir unsur olarak minare formuna yeni bir anlam yüklemektedir.
- İç mekânda tavanda yer alan kademeleşme, gök kubbenin katmanlaşmasını ve sonsuzluğunu simgelemektedir.
- İbadet mekânının ortasında bir su unsuru olarak çeşme kullanılmış, bu da hem saflığı hem de İslam'da temizliği ifade eden ögelere dönüşmüştür.
- Yapı düzleminde öteki dünyayı simgeleyen su ögesinin bulunduğu bahçe, cam kıble duvarı ile görünebilir kılınmakta, ibadet yönü itibariyle kişinin cennete yönelmesini ifade etmektedir.

- Katmanlaşmanın donatı oluşumuna yardımcı olması, dinde kolaylığı sağlarken, yapı dilindeki süslemeler de İslam'da mütevazılığı göstermektedir.
- Yapıda yer alan süslemelerin ve halı gibi iç mekân unsurlarının renk ve doku bazında uyumları da camide uygun atmosferin oluşmasına yardımcı olmaktadır.

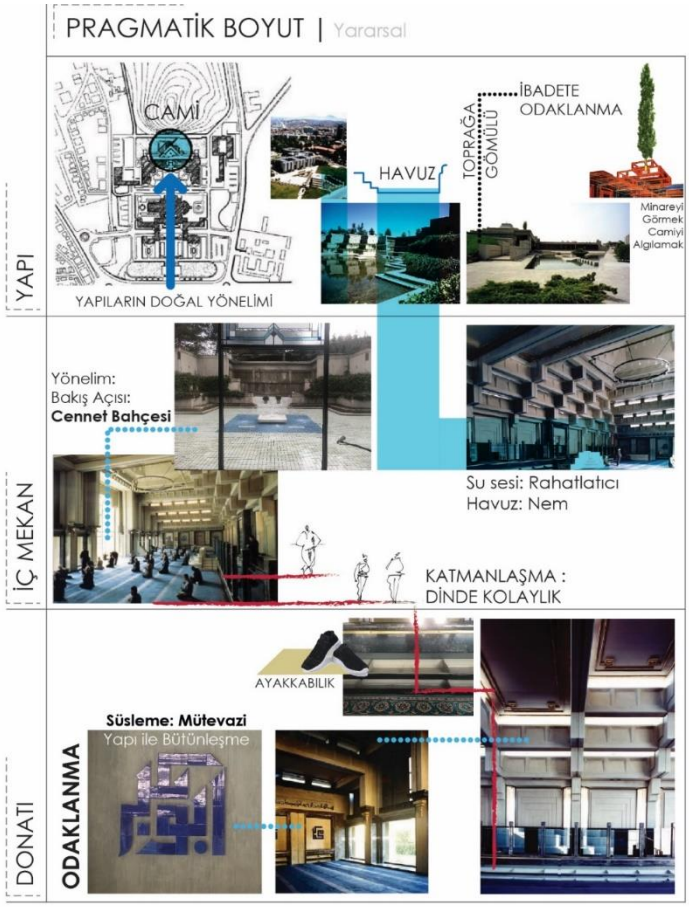


Görsel 9. TBMM Cami semantik okuma paftası

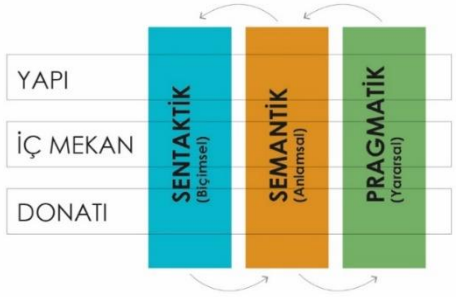
Yapı düzeyindeki biçimsel ve anlamsal okumalar işlevsel yönlendirmelere de kolaylık sağlamaktadır. Görsel 10'da yapı-iç mekân-donatı bazında pragmatik okuma sunulmuştur. Şemada ele alınan unsurlar şu şekilde özetlenebilir:

- Yapı kompleksinin bulunduğu arazide camiye doğal bir yönelim sunulmakta, cami de avlu – iç mekân geçişi açısından kolay bir yönelim sunmaktadır.
- Yapının toprağa gömülü – kotta tasarlanması kişiyi dünyevi hayattan belli bir oranda koparark dine yönelmesinde kolaylık sağlamaktadır.
- İç mekânda ibadet yönü cennet bahçesini simgeleyen su ögesine doğru olmakta, biçimsel düzenleme dini eylemi işlevsel yönden kolaylaştırmakta ve motive etmektedir.
- İç mekânda kullanılan çeşme bir su ögesi olarak semantik boyutta katkı sağladığı gibi hem rahatlatıcı bir etki sunmakta hem de nem sağlayarak işlevsel bir yarar sağlamaktadır.
- İç mekânda yer alan katmanlaşma ve ibadet için bir kot aşağı inme durumu, mekân kullanımında pragmatik bir değere dönüşmektedir. Üst katın oturma ile ayakta dinleme eylemlerine ayrılması ve alt kotta yapılan ibadetten belli ölçüde ayrıştırılması, konsantrasyon oluşumuna katkı sağlamaktadır.
- Süsleme bazında yapılan eklemelerin mütevazı ve yapı ile bütünleşiyor olması, ibadet esnasında konsantrasyonun sağlanmasında faydalı olmakta, dikkat dağınıklığını engelleyen bir unsur olarak göze çarpmaktadır.

- İç mekânda yer alan katmanlaşmanın, donatı bazında işe yarar arayüzlerin oluşmasına katkı sağladığı gözlenmiştir. Ayakkabılıklar, tavan ve çatı pencereleri bu etkinin hem iç mekân hem donatı bazında şekil bulmuş halleri olarak nitelendirilebilir.



Görsel 10. TBMM Cami pragmatik okuma paftası



Görsel 11. TBMM Cami okumalar

TBMM Cami mimari göstergebilim boyutları üzerinden okunmuştur. Yapı, iç mekân ve donatı bazında yapılan sentaktik, semantik ve pragmatik okumalar birbiri desteklemektedir (Görsel 11). Yapılan okumalar bütüncül bakış açısı ile değerlendirildiğinde aşağıdaki çıkarımlara ulaşılmaktadır.

Yapı bağlamında sentaktik, semantik ve pragmatik okumalar birleştirildiğinde, geleneksel cami tipolojisinde yer alan kubbenin, yerini katmanlaşmaya bıraktığı görülmüştür. Aynı zamanda yapının oturduğu zemin eğimli olduğu için katmanlaşmayı karşılamaktadır. Bu katmanlaşma anlamsal okumada cami tipolojisinin mütevazılığı ve dünyevi hayattan kopuşu vurgulamak için kullanılmıştır. Pragmatik okuma ile bakıldığında arazinin doğal yönelimini karşılamaktadır. Minare formu yerine canlı bir ağaç figürü konarak, işlevsel olarak bir anlamı kalmayan eklenti dini bir yoruma kavuşmuştur. Yapılan okumalar bütüncül bir bakış açısı ile ele

alındığında, TBMM Cami'nin yapı bazında geleneksel cami formunun sağladığı mütevazı, dünyalar arası bağı simgeleyen biçimsel aktarımı koruduğu görülmüştür.

İç mekân anlamında sentaktik, semantik ve pragmatik okumalar birleştirildiğinde, katmanlaşma ile oluşan tavanın iç mekânda kubbenin sağladığı sonsuzluk ve gökyüzü algısının yerini aldığı görülmüştür. Bu kademeli yapı yer düzleminde de kendini göstererek ibadet mekânını biçimsel olarak girişten ayırarak kişilere daha özelleşmiş bir alan imkânı sunmuştur. İç mekânda su ögesi dinde saflık ve temizliğin bir göstergesi olarak yerini modern uyarlamada da korumuştur. Ayrıca cennet bahçesini temsil eden havuzun cam kıble ile iç mekâna görsel olarak aktarılması da iki dünyayı birbirine bağlayan ibadet mekânı "cami" anlayışını sağlamlaştıran bir anlama sahiptir. TBMM Cami, geleneksel cami formlarının üstlendiği dinsel anlamı taşıyan modern bir uyarlama olarak önemlidir. Donatı bağlamında sentaktik, semantik ve pragmatik okumalar birleştirildiğinde, katmanlaşmanın mekânda donatı oluşumu için kolaylık sağladığı görülmüştür. İç mekânda dinde kolaylık anlayışını güçlendiren biçimsel elemanlara dönüşmüştür. İç mekânda yer alan süslemeler mütevazı unsurlar olarak hem dikkati dağıtmamakta hem de yapı ile uyumlu atmosferin oluşmasında yardımcı olmaktadır. Modern cami uyarlaması olarak TBMM Cami, geleneksel cami tipolojilerinde rastlanan dinde kolaylık mütevazılık pragmatizmini yansıtmaktadır.

SONUÇ

Sonuç olarak göstergelerin okuması ile mimari yapının anlamı ortaya konmak istenmiştir. Öncelikle ele alınan mimari örneğin düz anlam ve yan alamı ortaya çıkmıştır. TBMM Cami birincil ve düz anlamı ile bir ibadet mekânıdır. Ortalama 450 kişinin ibadeti için tasarlanmış meclis komplesi içerisinde yer alan bir yapıdır. Bir cami yapısı olmasının ötesinde yan anlamına bakıldığında ise iki dünya arasında bir köprü, mütevazı, insanın sınırını aşan ve sonsuzda bir mekân okuması yapılmaktadır. Göstergelerin okunması yoluyla ortaya çıkmıştır ki; cami yapı, iç mekân ve donatı bazında geleneksel tipolojinin özelliklerini taşımaktadır. Cami tipolojisinde önemli görülen aktarımlar ve biçimlerin üstlendiği anlamlar modern uyarlamalarda da korunabilmektedir. Göstergebilim okuması bize TBMM Cami'nin özüne inme fırsatı sağlamakta ve bunu göstermektedir.

TBMM Cami her ne kadar göstergebilimsel analizin sentaktik, semantik ve pragmatik boyutlarıyla ele alınsa da bu üç unsura dair okumaların birbirini desteklediği görülmektedir. Biçimsel okuma anlamsal boyuta ve pragmatik boyuta katkı sağlamış, anlamsal ve pragmatik ögeler birbirini destekleyecek biçimlere dönüşmüştür. Biçimsel ögelerin anlamlarının ele alındığı semantik okuma, aynı zamanda cami yapısında yer alan formların yan anlamları olarak da değerlendirilebilir. Birbirine akan bu üç okuma modern bir uyarlama olarak TBMM Cami'nin geleneksel cami tipolojilerinde yer edinen anlamlardan uzaklaşmadığını ortaya koymaktadır. Yapı, iç mekân ve donatı bazında irdelenen biçimlerin İslam felsefesi ile bağdaşan anlamsal karşılıkları bulunabilmiştir. Analiz sonucunda bu biçimlerin sadece anlama yönelik geliştirilmediği aynı zamanda işlevsel karşılıkları olan formlar olduğu da ortaya konmaktadır. Özellikle iç mekânda yapılan biçimsel okumaların aynı zamanda kullanımda kolaylık sağlayan işlevsel unsurlara dönüştüğü gözlenmiştir. Bir mimari gösterge olan TBMM Cami'nin anlamlama süreci biçimsel, anlamsal ve pragmatik boyutlar üzerinden gerçekleştirilebilmiştir. Çevremizde yer alan cami formları, dini dayanakları bulunan kültürel değerlerden gelen biçimlerdir. Çalışmada değinildiği gibi geleneksel cami tipolojisinde yer alan formlar kültür, topoğrafya, iklim, sosyal yaşam gibi etkenlerden beslenerek oluşmuştur. Bu araştırma, çağdaş cami uyarlamalarında da aynı felsefeye bağlı derin anlamların aktarılabileceğini ortaya koymaktadır. Mimari göstergebilim boyutlarıyla okunan TBMM Cami bunun bir örneğidir.

Yapılan çalışma TBMM Cami üzerinden gerçekleştirilen bir mekânsal okuma eskizi olarak değerlendirilebilir. Ele alınan örnek, cami tipolojilerini incelemek üzerine kurulu olsa da yapılan araştırma kullandığı analiz yöntemiyle her tür yapıya devşirilebilecek türden olduğunu ortaya koymaktadır. Buradan hareketle araştırmanın desteklediği bir diğer argüman, her mimari ögenin temel özelliklerini okumayı öğrenebileceğimizdir. Gözle görülür temel biçimsel ögelerin okunarak başlandığı analiz, anlamsal ve işlevsel okumalarla da desteklenmekte, araştırmanın örneğinde görüldüğü üzere mimari yapılar belli bir düzeye kadar okunabilir olmaktadır. Araştırma aynı zamanda dini yapılar ve göstergebilimi birleştiren iç mimarlık alanında çıkan çalışmalardan biri olması ile ayrışmaktadır. Çalışma iç mimarlığın araştırma alanının genişliği ortaya koyması ile de önemli görülmektedir.

Authors' Contributions

The author contributed 100% to the study.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

This study does not require ethics committee approval.

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Görsel 8-9-10: Yazar tarafından oluşturulmuştur. Paftada kullanılan görseller için Aga Khan Development Network (t.y.) ve kişisel arşivden yararlanılmıştır.

Tablo 1: Yazar tarafından oluşturulmuştur. Paftada kullanılan görseller için Özçakı (2018), Kişmiroğlu & Anıktar (2023) ve kişisel arşivden yararlanılmıştır.

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Research Article

An examination of ironworking examples in traditional Safranbolu house doors through the approach of shape grammar

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Abstract
Safranbolu is renowned for its traditional architecture and the local tradition of ironworking in Turkey. The importance attached to sustaining ironworking as well as traditional architectural heritage has led to the launch of a research initiative to study examples of ironworking and to encourage diversification of production. This study uses a mathematical analysis to investigate the latch mirrors on traditional Safranbolu house doors. The research methodology consists of several basic steps. These are the literature data that form the background of the research, their interpretation, and the steps used to implement the proposal. After collecting literature and visual data, the research continued with the two-dimensional digital drawings to reveal the form and components of the door latch mirrors. Then, the analysis of the shape of the keyframe in the plate, the most common ornamental area in latch mirrors, was carried out. Finally, new patterns were produced through the algorithmic process using Rhinoceros-Grasshopper plug-in. This study provides valuable information about the ornamentation techniques used in the traditional house doors of Safranbolu and significantly contributes to the maintenance of local craftsmanship. Importantly, it empowers craftsmen by offering practical benefits by providing sample models and suggestions for improving decorative ornamentation.

Keywords: Traditional Safranbolu house, Ironworking, Shape grammar, Door latch mirror

Extended Abstract

Introduction: Safranbolu, located in northwestern Turkey, is famous for its traditional architectural housing texture. These houses reflecting the Turkish architectural style are part of the cultural richness in the city (Aksoy & Kuş, 1999). Like the traditional Safranbolu houses, the doors, which are the building components of these houses, and the local blacksmith craft examples on the doors are also among the components of this culture (Alpman & Sezgin, 2009: 32). The metal elements on the doors were shaped by local craftsmen with their knowledge not only for functional purposes but also for ornamental purposes. This approach has enabled metal ornaments, which have a particularly essential position in blacksmith craft, to emerge (Tunçözgür, 1999: 103; Pamuk, 2010; Göktaş Kaya, 2010). Metal elements on doors include nails, rings, knockers, door handles, latches, bolts, bolt mirrors, locks, and lock mirrors. The craftsmen elaboratively customized the examples of ironwork here according to the profile of the homeowner, with individual and original motifs. Motif designs are inspired by ancient motifs, stylized animals, plants, and geometric shapes found in Anatolia (Barlas, 2004: 31-34). When the literature is examined, many studies investigate the history, ornamentation, sustainability, and producer experiences of ironwork. However, there is yet no published research examining the creation of implicit knowledge-based variations of ironwork ornamentation on Safranbolu's traditional house doors.

Purpose and scope: The goal of the present study is to analyze the design configurations of the door latch mirror, which is the most densely ornamented example of ironwork, and create diversity from the obtained knowledge through digital design tools, with the criteria of preserving it as a local craft, identifying its design approaches and productive potential,

and passing them on to future generations. Considering sustainability as a form of reproduction, it exhibits a different and unique approach. By using the potential and techniques of the shape grammar approach in the analysis, it explores the conditions for useful proposal methods for innovative designs to prevent the production of non-original imitations.

Method: The exterior doors of Safranbolu houses are adorned with metallic elements comprised of multiple recurrent geometric shapes. Specifically, metal plates featuring engravings of equilateral triangles arranged in various configurations constitute an integral facet of the overall decorative scheme (Sönmez, 1976: 18). The preeminent example of ironwork incorporating these embellishments is manifested in the form of door latch mirrors. The observation that the embellishments adorning each latch mirror are derived from the combination of equilateral triangles underscores the potential for geometric feature development through the analysis of recurring elements. For the purpose at hand, this study employs shape grammar to delineate designs and engender forms predicated upon a set of rules or principles. The shape grammar approach primarily employs the qualitative method, focusing on constructing and analyzing space and object configurations based on predetermined rules or grammar. Within this approach, emphasis is placed on spatial relationships, patterns, and design principles. While quantitative data may occasionally support rules governing specific dimensions or proportions, the qualitative aspect remains paramount. Design similarities are scrutinized by identifying recurring motifs or patterns across multiple products. Through these similarities, overarching rules defining the grammar, such as pattern-design principles, are discerned- these may include repeating motifs or similar geometric shapes. These rules delineate how shapes can be manipulated and combined to generate new designs. By utilizing visual scripts in Rhino Grasshopper, which encodes the rules of shape grammar, designers can produce new designs by adjusting the parameters of the shape grammar. This study uses a mathematical analysis (Rule Formalization, Pattern Recognition, Algorithmic Generation, Parametric Variation) to investigate the latch mirrors on traditional Safranbolu house doors. The research methodology consists of several basic steps. These are the literature data that form the background of the research, their interpretation, and the steps used to implement the proposal. After collecting literature data and visual data (15 images of door latch mirrors), the research continued with the two-dimensional drawing of the latch mirrors using the AutoCAD program to reveal the form and components of the door latch mirrors. After this step, the plate that forms the keyframe, the most common area of ornamentation on the latch mirrors, was determined to be used in the application step. The mathematical analysis of the two-dimensional drawing of the current examples and shape in the frame of the key was carried out. In other words, design languages were determined. As a result of this analysis, new patterns were produced using Grasshopper, which works as a Rhino modelling program plug-in. As a result of the application, 20 new patterns were created.

Findings and conclusion: This study presented a mathematical representation of tacit knowledge in a craftsman's design approach. The algorithmic structure designed by parametric design tools has triggered new variations in an interactive way based on the tacit knowledge in the designers' subconscious. Thus, it has defined an alternative way to the similar repetitions in the examples by the contributions of the instant seeing-doing approach. By the sample implementations of the proposal approach, the study has demonstrated that the deep potential in ornament variations can be increased with shape and size differences of the basic elements formed by drilling and forging, and by spatial diversities of how to put them together. By the sample implementations of the proposal approach, the study has demonstrated that the potential in ornament variations can be increased with shape and size differences of the basic elements formed by drilling and forging, and also by spatial diversities of how to put them together.

Keywords: Traditional Safranbolu house, Ironworking, Shape grammar, Door latch mirror

INTRODUCTION

Safranbolu, situated in the northwest part of Turkey is renowned for its houses that showcase the architectural style of the Ottoman era. The most crucial factor that makes Safranbolu stand out not only in Turkey but also in the world is that Safranbolu houses reflect traditional Turkish architecture. The presence of Safranbolu houses serves as a testament to the enduring vitality of culture, even in contemporary times (Aksoy & Kuş, 1999).

The houses in Safranbolu attract attention with their architectural examples from the past to the present. One distinctive feature of these houses is the doors, which hold significance beyond their purpose of providing an entrance to the outside world. The doors are deeply intertwined with the beliefs, traditions, and cultural identities of the people residing in these houses. As noted by Sönmez (1976: 18) they have become representations of the individuals' personalities, virtues, and dignity, within their households. The importance of doors in traditional Safranbolu houses can be attributed to the influence of the blacksmithing profession, which has long been an integral part of the city's cultural heritage. This profession added a unique spirit to

the city's architecture, as is evident in the ornate ironwork found especially on the doors of traditional Safranbolu houses (Alpman & Sezgin, 2009: 32).

In the traditional houses of Safranbolu, street doors are usually double leafed, which are adorned with intricate carvings and serve as a characteristic feature of the architectural style. Metal decorations also start on the street doors. The metal ornaments on the doors consist of many elements such as rings, knockers, door handles, latches (and mirrors), locks (and mirrors), and nails. These elements are produced in the Safranbolu blacksmiths' bazaar (see Figure 1). The craftsman in the blacksmiths' bazaar shape the metal parts on the doors not only for functional purposes but also to decorate the doors. Metal ornaments reflecting Safranbolu's cultural heritage emerged as a result of this approach (Tunçözgür, 1999: 103; Pamuk, 2010: 50; Göktaş Kaya, 2010: 342).

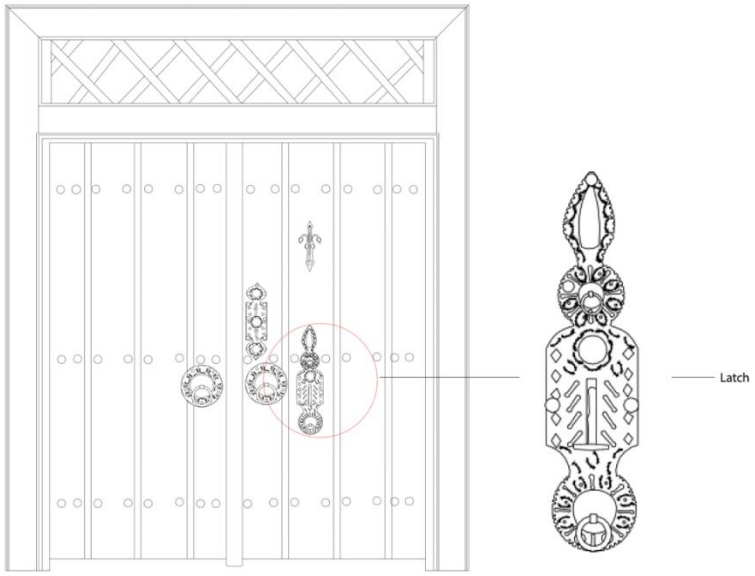


Figure 1. Positioning of latch on the traditional Safranbolu door

The local craft of ironwork is an important part of the metal pieces that decorate the doors of traditional Safranbolu houses. The city is characterized by both housing and the local craft of blacksmithing, which has been an important part of Safranbolu's cultural heritage for centuries. Blacksmithing and blacksmith craftsmanship developed Safranbolu to such an extent that a tradition emerged in which ornamentation was of equal importance to function. In addition, examples of metal ornamentation have led to the creation of different designs as unique examples of production (Barlas, 2004: 29; Günay, 1998: 322).

The literature on ironworking in Safranbolu is quite extensive. For example, Göktaş Kaya (2010: 341) and Pamuk (2010: 50) examined metal decorations in Safranbolu houses. Dağı and Çelik (2020: 26) focused on the history of ironwork in Safranbolu. Beyond the examination of existing examples, Kaya Köse and Gözlükaya (2022: 2), within the scope of a project, sought to answer the question of how the examples of ironwork on Safranbolu traditional residential doors can be transferred to future generations through design. Canbulat (2022: 380), and Deniz and Çelik (2020: 123) contributed to the literature with their studies examining the knowledge of ironwork craftsmen. When all these academic studies were examined, no study was found to examine the creation of variations of ironwork ornaments on Safranbolu's traditional house doors.

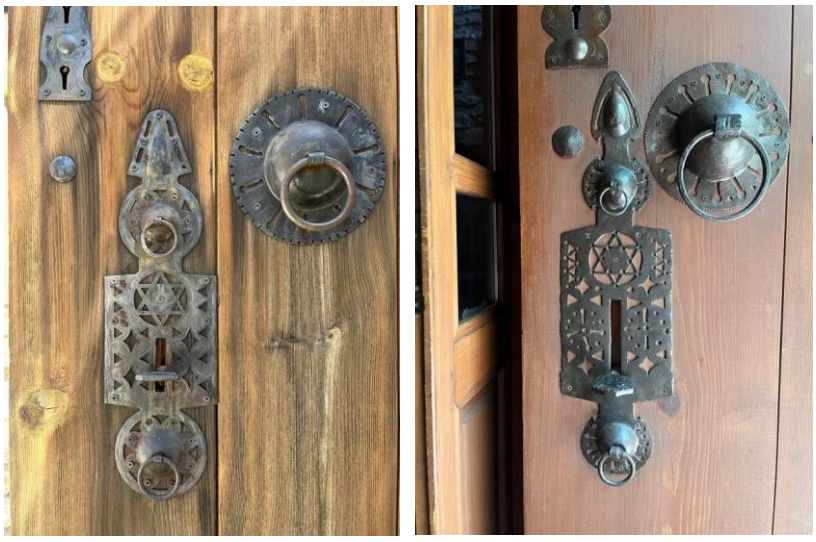
When the doors in Safranbolu traditional houses are examined, it is possible to say that the letters in the Central Asian alphabet are used or that various motifs belong to the ancient period. In addition, it is important and valuable to investigate the ornamentation approaches in ironwork examples (Barlas, 2004: 30), whose ornaments were developed over time under the Islamic understanding. Among the examples of door ironwork, the most prominent products with ornaments are the door latch mirrors. For this reason, examining the motifs on the door latch mirrors and creating original models can help transfer the ironwork craft tradition to future generations with innovative applications.

The studies in the literature on Safranbolu iron craft have mainly aimed to preserve ironworking as a local craft. However, this study takes a valuable approach to the craft as a form of reproduction, as it also incorporates sustainability. In particular, the study focuses on analyzing the geometric structure of ironwork examples and creating diversity in reproduction. The goal of re-creation involves systematizing tacit knowledge to generate new patterns. As a result, the study aims to fill the gap in the literature by analyzing examples of ironwork found on traditional Safranbolu residential doors using a shape grammar approach. To accomplish this, the research utilizes digital design tools that are widely available today, offering a new perspective that adds value to the existing literature.

Background: Metal Decorations on Traditional Safranbolu House Doors

Throughout history, doors have reflected humankind's beliefs, traditions, tastes, and characters. They are indispensable parts of architecture and have evolved, differentiating from period to period. These structures are used in various settings, from palaces and houses to baths and castles. With the locks, knockers, and keys on them, doors have taken their place in today's cultural history as striking examples of culture (Saraçoglu & Karakaş, 2008: 138). In traditional Safranbolu houses, stone walls separate the gardens from the street, and large double-winged doors lead into the garden or sometimes directly into the house. Even at the door, the splendor is visible, with large locks on each door, rings next to the locks, a knocker (known locally as "şakşak"), and a latch device for knocking on the door (Aksoy & Kuş, 1999). Examples of ironwork on doors differ in form, production technique, and ornamentation based on the function of the space in which they are used.

The examples of door embellishments found on traditional Safranbolu houses are unique in their various forms, each produced according to the homeowner's occupation. The blacksmiths of Safranbolu recreated ancient motifs -also found in Anatolia- to the homeowners' tastes. These motifs were stylized animals, plants, creatures of legend, and pieces of nature (Barlas, 2004: 31-34). Although door knockers, rings, and key rings may symbolize different meanings, the particular skill demonstrated by the blacksmith is considered the essential indicator of the craftmanship (Dağı & Çelik, 2020: 31).



a b

Figure 2. Door latch mirrors examples on the traditional Safranbolu house doors (a) Akbulut House (b) Imren House

Traditional Safranbolu house doors have a simple appearance consisting of flat and vertical plates. To open the door, it is necessary to lift the latch handle, which has caused the latch mirror to take an elongated shape depending on its function (Günay, 1998: 153). For this reason, latch mirrors tend to be decorated more elaborately than other metal elements on doors.

Figure 3. Samples of door latch

The exterior doors of Safranbolu houses are embellished with metal elements that consist of several repeated geometric shapes. These decorative features are visible on the doors of all the houses in the district that adhere to traditional practices. In particular, metal plates are engraved with equilateral triangles in various configurations, forming an integral component of the overall decorative scheme (Sönmez, 1976: 18). The shape of the latch mirror on Safranbolu doors is determined by the width and length of the latch handle required to open the door. As a reflection of the owner's financial status, the size of the latch mirror can either increase or decrease accordingly. Additionally, the ornamentation on the latch mirror is produced uniquely based on the craftsman's level of expertise. Triangular ornaments are commonly used to decorate the latch mirrors on the doors of traditional Safranbolu houses. These ornaments are placed around the area defining the door-opening function. The use of repeating geometric shapes on the latch mirrors has led to the idea that this similarity can be established in traditional Safranbolu residential doors. In this regard, door latch mirrors featuring triangular decorations were selected as the sample for the field study.

Shape Grammar Approach

Shape grammar is a methodology proposed by Stiny and Gips (1972: 6) to analyze painting and decorative art to describe designs and generate forms based on a set of rules or principles. It is one of the first algorithmic systems for understanding and reconstructing form through computation with shapes.

> A shape grammar has four components: (1) S is a finite set of shapes; (2) L is a finite set of symbols; (3) R is a finite set of shape rules of form a -+ 0, where a is a labelled shape in + (S, L), and 0 is a labelled shape in (S, L)*; and + (4) / is a labelled shape in (S, L) called the initial shape. In shape grammar, the shapes in the set S and the symbols in the set L provide the building blocks for the definition of shape rules in the set R and the initial shape /. Labelled shapes generated using the shape grammar are also built up in terms of these primitive elements. (Stiny, 1980: 347)

A shape grammar is a set of guidelines for the construction of shapes that are gradually applied to create a design set or language. As stated by Knight (1999: 213), these grammars are both generative and descriptive. Numerous design objectives, such as analyzing, synthesizing, and innovation, have been addressed by shape grammar (Knight, 1999: 213; Stiny, 2006: 1-9; Cenani & Çağdaş, 2006: 291). They make it possible to describe and analyze already-existing designs, generate alternate designs using rules, and to develop brand-new designs. Numerous design disciplines, including urban design, architecture, landscape design, crafts, painting, product design, and mechanical design, have extensively used these problems (Knight & Stiny, 2015: 10).

The primary objective of this study is to conduct an in-depth examination of the latch mirror, a remarkable example of ironwork on the door and an integral architectural element of the traditional Turkish house in the Safranbolu region. The study will utilize a range of analytical methods to explore the stylistic and functional characteristics of the latch mirror and to investigate its historical and cultural significance within the broader

context of the Ottoman architecture and decorative arts. Geometric patterns, also seen in the decoration of the latch mirror, are the essential ornamental design components of Islamic art which is derived from Greek mathematics based on pure geometry. According to Pythagoras, everything in the universe can be described by mathematics. Every number has a particular meaning. For example, the cube and square represent the world, the pyramid and triangle represent fire, and the dodecahedron represents the universe. In Islamic art, two-dimensional geometric patterns are compositions of closed polygons (Cenani & Çağdaş, 2006: 292). Examples in the literature of the form grammar method for Islamic geometric patterns include:

- The patterns derived from the geometric decomposition of the patterns of the eight-pointed star motif in Islamic art (Kaplan, 2000: 107),
- The symmetry of geometric patterns in Islamic art using rule sets for the production of two- and three-dimensional forms, and the potential of the mathematics of geometry (Cenani & Çağdaş, 2007: 1),
- The production of a geometric ornament selected from a sample ornament design by coding it with a computer programming language (Cenani & Çağdaş, 2006: 290),
- Discussing the algorithmic construction method of Islamic ornaments that can be used as a decorative element in architectural design (Nadyrshine et al., 2021: 1),
- Creating a three-dimensional parametric pattern generator of the star polygon pattern on tombstones (Ağırbaş, 2020: 113),
- Producing variations of the star-shaped ceiling rose ornament in the Safranbolu house within the framework of different scenarios (Dinçer & Kartal, 2022: 39).

The common point in the geometric surface decorations used on all these different materials is the reproduction of the analyzed ornaments by specific rules. Geometric surface decorations are frequently utilized across various materials, including ceramics, textiles, and architectural elements. However, they are characterized by a common thread: replicating analyzed ornaments according to specific rules. This process involves the application of mathematical principles and symmetrical designs, which can vary depending on the cultural and contextual influences shaping each art form.

In Islamic art, geometric and floral patterns are created with basic geometry rules such as isometric transformations and Boolean operations. Translation, rotation, reflection, and repetition are isometric transformations (also called Euclidean transformations). Boolean operations include addition, intersection, and subtraction (Cenani & Çağdaş, 2007: 3). Repetition is also the most influential and essential theme for geometric patterns. There may be one or two basic shapes in an Islamic ornament, but the interlocking designs of these basic shapes ultimately create different and complex patterns. Ornamental designs are often created by repeating square and triangle shapes (Cenani & Çağdaş, 2006: 292). In many houses, mosques, and inns within the historical texture and architecture of Safranbolu, it is possible to see the art of blacksmithing on the streets of Safranbolu, where blacksmith masters can show their skills (Dağı & Çelik, 2020: 31). Using equilateral triangles to form the decorative patterns on latch mirrors highlights the potential for geometric exploration by analyzing repeated elements. This analysis process, often utilizing shape grammar, can inform future design iterations by identifying areas for improvement and suggesting new directions for design. Through the ongoing examination and refinement of existing examples, the art of blacksmithing and other traditional crafts can be preserved and enriched for future generations.

METHODOLOGY

The shape grammar approach primarily employs the qualitative method, focusing on constructing and analyzing space and object configurations based on predetermined rules or grammar. Within this approach, emphasis is placed on spatial relationships, patterns, and design principles. While quantitative data may occasionally support rules governing specific dimensions or proportions, the qualitative aspect remains paramount. Design similarities are scrutinized by identifying recurring motifs or patterns across multiple products. Through these similarities, overarching rules defining the grammar, such as pattern-design principles, are discerned- these may include repeating motifs or similar geometric shapes. These rules delineate how shapes can be manipulated and combined to generate new designs. By utilizing visual scripts in Rhino

Grasshopper, which encodes the rules of shape grammar, designers can produce new designs by adjusting the parameters of the shape grammar.

This study uses a mathematical analysis (Rule Formalization, Pattern Recognition, Algorithmic Generation, Parametric Variation) to investigate the latch mirrors on traditional Safranbolu house doors. The research methodology consists of several basic steps. These are the literature data that form the background of the research, their interpretation, and the steps used to implement the proposal, as visually depicted in Figure 4. After collecting literature data and visual data (15 images of door latch mirrors), the research continued with the two-dimensional drawing of the latch mirrors using the AutoCAD program to reveal the form and components of the door latch mirrors. After this step, the plate that forms the keyframe, the most common area of ornamentation on the latch mirrors, was determined to be used in the application step. The mathematical analysis of the two-dimensional drawing of the current examples and shape in the frame of the key was carried out. In other words, design languages were determined. As a result of this analysis, new patterns were produced using Grasshopper, which works as a Rhino modelling program plug-in. As a result of the application, 20 new patterns were created. The application steps are explained in detail under the title A Case Study.

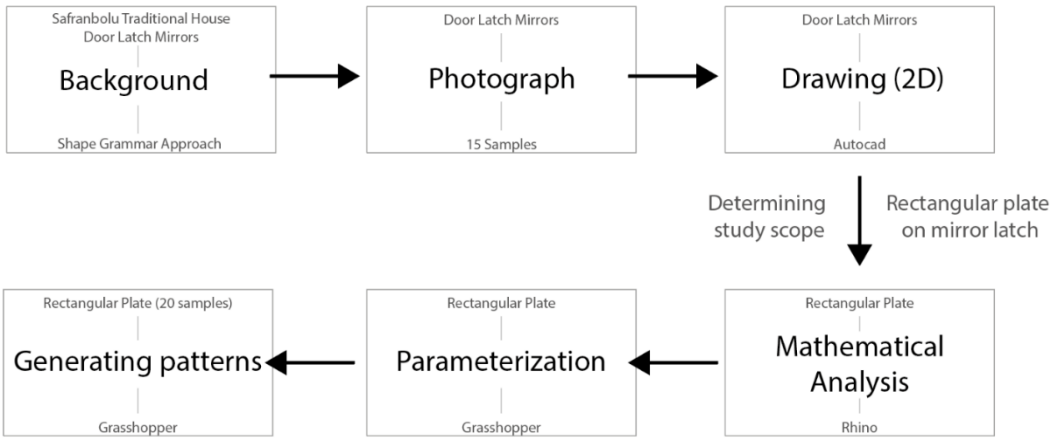


Figure 4. Methodology of the study

A CASE STUDY

Shape Grammar rules and implementations on Latch Mirrors

The decorations on the door latch mirrors of Safranbolu's traditional houses are directly linked to the social status of the householder, with each latch featuring a unique design. Maintaining diversity and originality in these latch mirrors, which continue to be produced as unique pieces today, is essential. The analysis of these door latch mirrors is crucial for the development of new products. Therefore, it is necessary to examine the existing door latch mirrors first.

When the door latches in Safranbolu traditional residential doors are examined, the shaping of the door latches consists of two stages. These are: (1) the shaping given to the main form of the metal plate, and (2) the decorations made on this plate with fullness-emptiness and marks on the plate. A combination of certain geometric forms characterizes the basic form of the door latch plate.

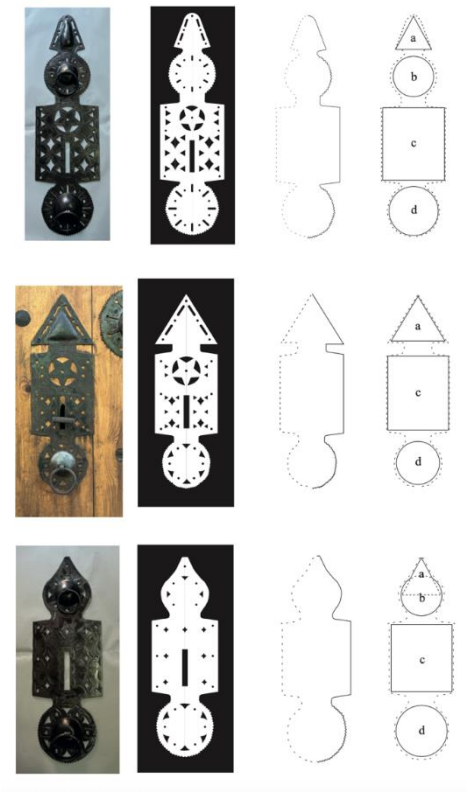


Figure 5. Door latch form and components

After determining the main layout of the plate, it is possible to evaluate the works of creating various patterns on the plate by drilling/opening gaps or forging/marking by dividing them into groups within themselves. The boundaries of this grouping are determined by the subcomponents of the main form (triangle, circle, rectangle, etc.). The variety of patterns is observed in the rectangular shape, which is the main component of the plate. However, variations in other components are limited for dimensional reasons. The center section of these components is forged into a concave shape and the edges are patterned. Therefore, the patterns are linear or radial. The limiting element is the key blank in the rectangular shape (latch mirror). Because past key sizes were relatively large and standardized, this key blank on the latch mirror is distinct, fixed, and features a striped rectangular pattern on the plate surface. Its position is in the center, near the underside or the top of the plate throughout the central axis. In the present examples, although there are exceptions, the key blank naturally defines boundaries that are not visible, especially for producing blank patterns. These limits include a certain combination (Figure 6). Certain geometrical elements are brought together in a linear, radial, grid, or mixed pattern for the pattern on these borders. Although these boundaries are different, the craftsman's general sensitivity to symmetrical balance in the holistic order leads to repetitive solutions in the compositions.

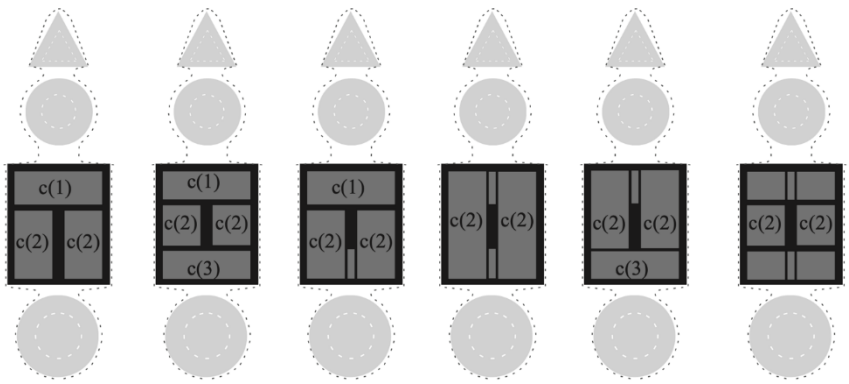


Figure 6. Details of the combination of plates

Basic elements such as circles, thin and long rectangles (with or without chamfered short sides), triangles (with straight edges or arc-shaped edges), and quadrilaterals (with straight edges or arc-shaped edges) are used for blank creation (Figure 6). Among these, the triangular elements used to form the star symbol are mainly preferred. Circular and quadrilateral elements are usually found together in the compositions. The large square or nearly square shape is found only in one or two examples. Thin and long rectangle elements are also mostly applied in other components of the plate (triangle and circle).

Finally, the latch mirror design is completed by repeating patterns around the plate layout in a zigzag or "set symbol" pattern. These patterns may not be present in each of the components of the main layout, may be of a different type, or may be repeated a different number of times (see examples of latches in Figure 3).

FINDINGS: PROPOSAL MODEL

This chapter comprises of a set of parametric and interactive applications to assist designers in decision-making and alternative generation has been made by the Rhinoceros-Grasshopper plugin. These practices encompass five stages: determination of the main layout of the plate, creating rectangular plate ornaments, designing knocker section ornaments, fashioning upper head ornaments, and incorporating additional ornaments. This study primarily concentrates on the use of ornamentation in rectangular plates.

Rectangular plate ornament

The door latch mirror is defined as a "Rectangular plate" because of the shape of the plate where the key blank is situated. As mentioned in the analysis section, the position of the key blank is substantial for determining shapes on the latch mirror. The key blank can be positioned vertically in the center of the rectangular plate. While the key blank dimensions can be parametrically adjusted, it's worth noting that the key dimensions are typically standard, so there is usually no need to change them. Once the key blank layout is decided upon, the designer manipulates five different sets of design production areas for creating blank compositions. In other words, the rectangular plate is divided into sub-surfaces and these sets are solved independently. At this stage, it is up to the designer to ensure a cohesive composition on the plate or to establish the relationships between them.

The designer selects one of these sets and creates compositions for them. The harmony among the compositions in the set is achieved by applying the rule of symmetry, as the craftsman practices. The designer had the flexibility to adjust layout dimensions or create sub-layouts based on the design, incorporating vertical or horizontal orientation partitions and making parametric dimensional changes. Meanwhile, there are trade-offs involved in making dimensional interventions to the layouts. This means that the other layouts increase simultaneously when one layout's size decreases.

As mentioned in the previous sections, in the case of the latch mirror, the craftsman creates patterns by drilling or forging in the shape of specific elements, usually in a radial or grid pattern. Therefore, within the specified layouts in the model, the designer can create examples of grid and radial patterns that can be applied independently or in combination. When applied together, eliminations are made in the grid patterns that remain in the area of the radial ones. The geometric elements determined in the analysis are used in these ornament designs. Although these elements are essential geometric elements (circle, triangle, quadrilateral, etc.), they are customized by adding various transformation elements and making them available in a single module.

In the radial arrangement, geometric elements are placed around certain orbits according to the number determined by the designer. The designer also determines the number of orbits, which can be increased or decreased depending on the size of the layout boundaries. In the model, radial pattern elements extending outside the layout are deleted. The distances between orbits are variable. These distances determine the limit of the dimensions of the geometric elements. The designer can change the dimensions and shapes of the elements between these boundaries. The craftsmen's behaviors reveal that they chose this arrangement to achieve the star form in the arrangements. However, they produce variations by using different elements (such as circles and rods) in this order. It is, therefore, possible to create patterns with this model by using elements other than the triangular elements describing the star form.

Grid arrangements are often observed in the analyses conducted in areas on the sides of the key blank or beside the radial arrangement at the top of this plate. Three or four geometric shapes can be placed next to each other horizontally and repeated several times vertically. Accordingly, the designer defines the number of rows and columns in the model. The border determines the spacing of the grid layout by scaling according to the layout dimensions. The arrangement creates patterns by grouping the input data generated by Boolean operations and deciding which type of geometric elements to arrange next to each other. The choice of geometric elements and their combination in the arrangement is at the designer's discretion. Therefore, it is possible to choose different types of elements not used by the craftsman.

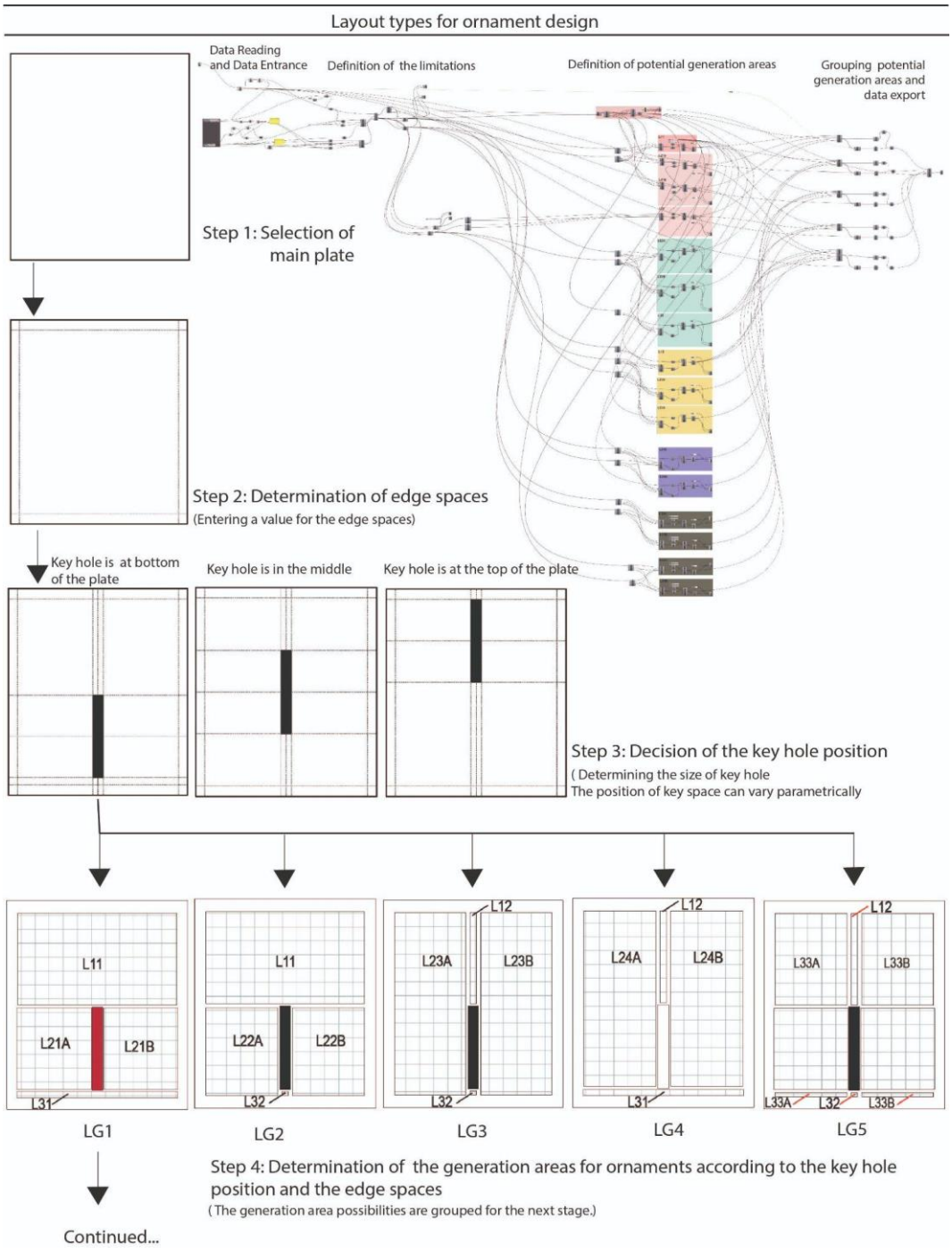


Figure 7. Ornament design process for the rectangular plate (latch mirror)

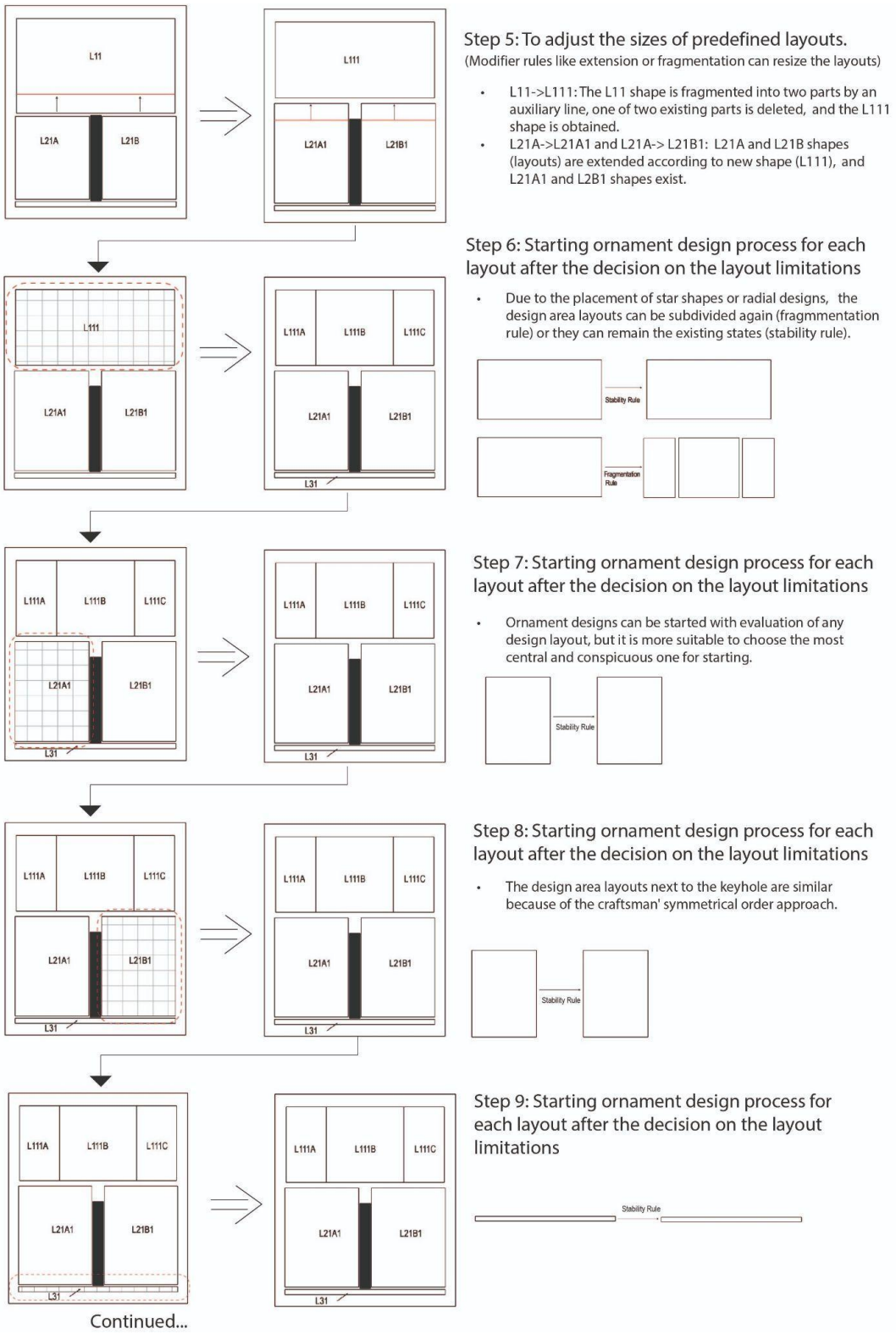


Figure 7 (continued). The ornament design process for the rectangular plate

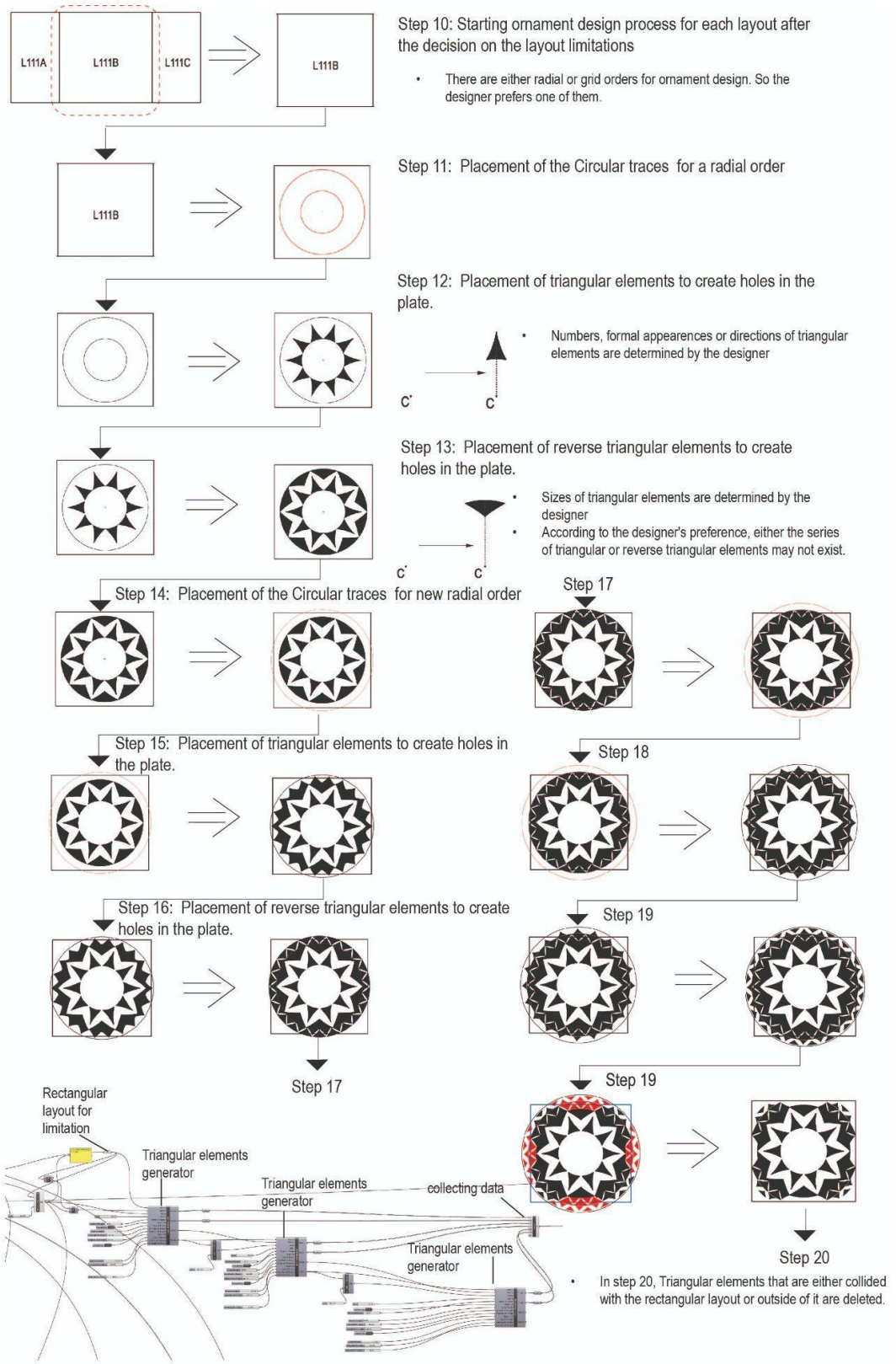


Figure 7 (continued). The ornament design process for the rectangular plate

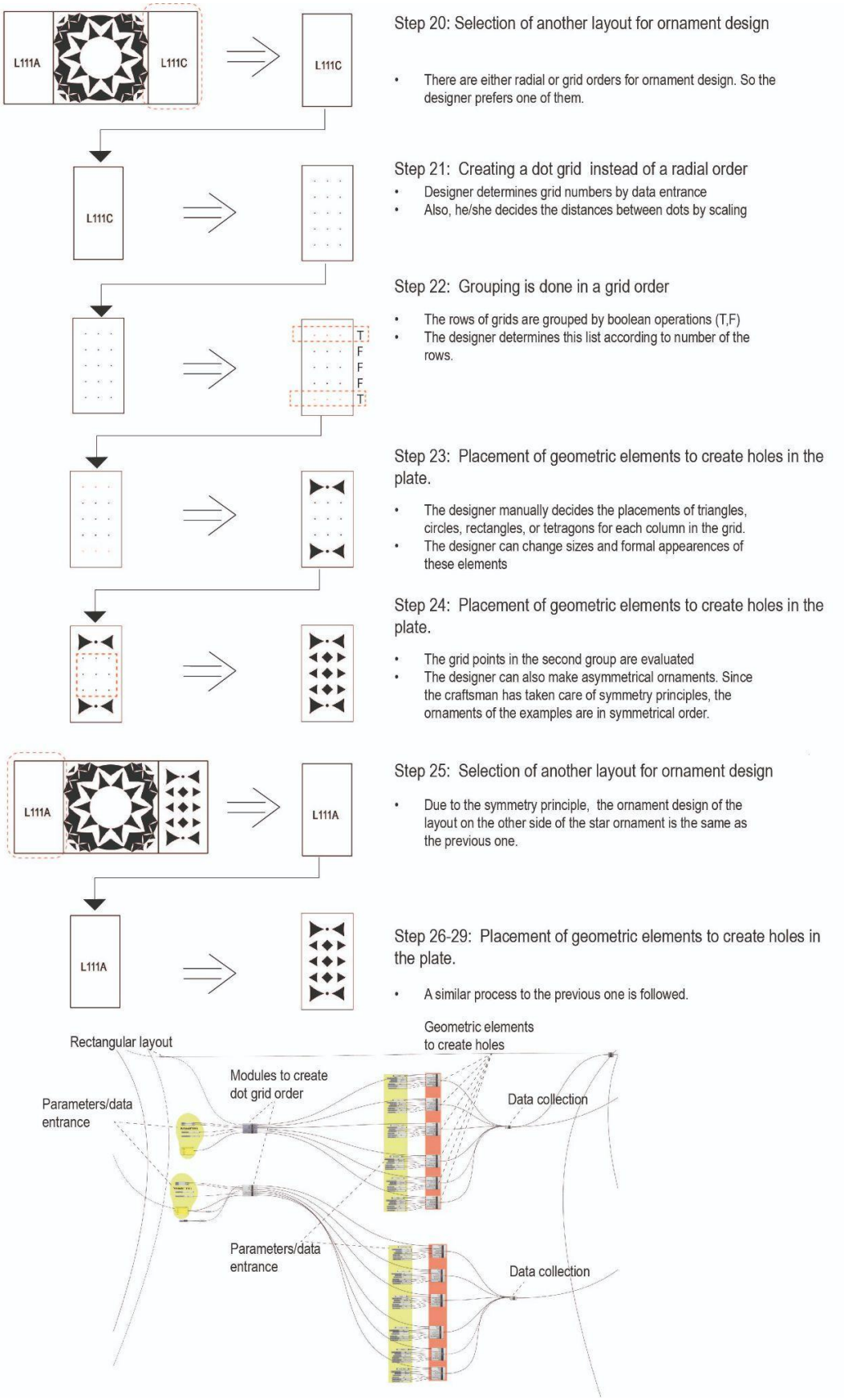


Figure 7 (continued). The ornament design process for the rectangular plate

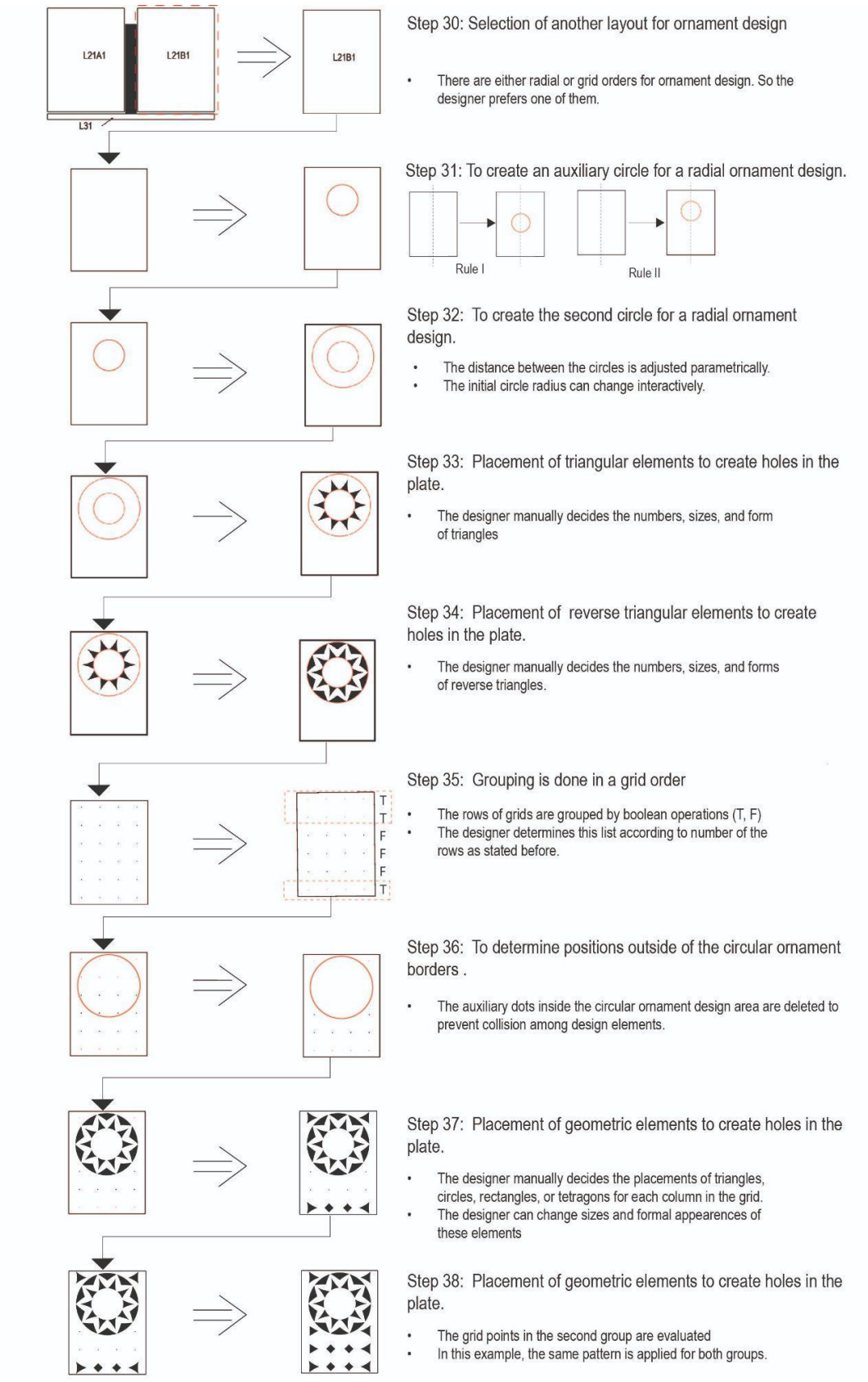


Figure 7 (continued). The ornament design process for the rectangular plate

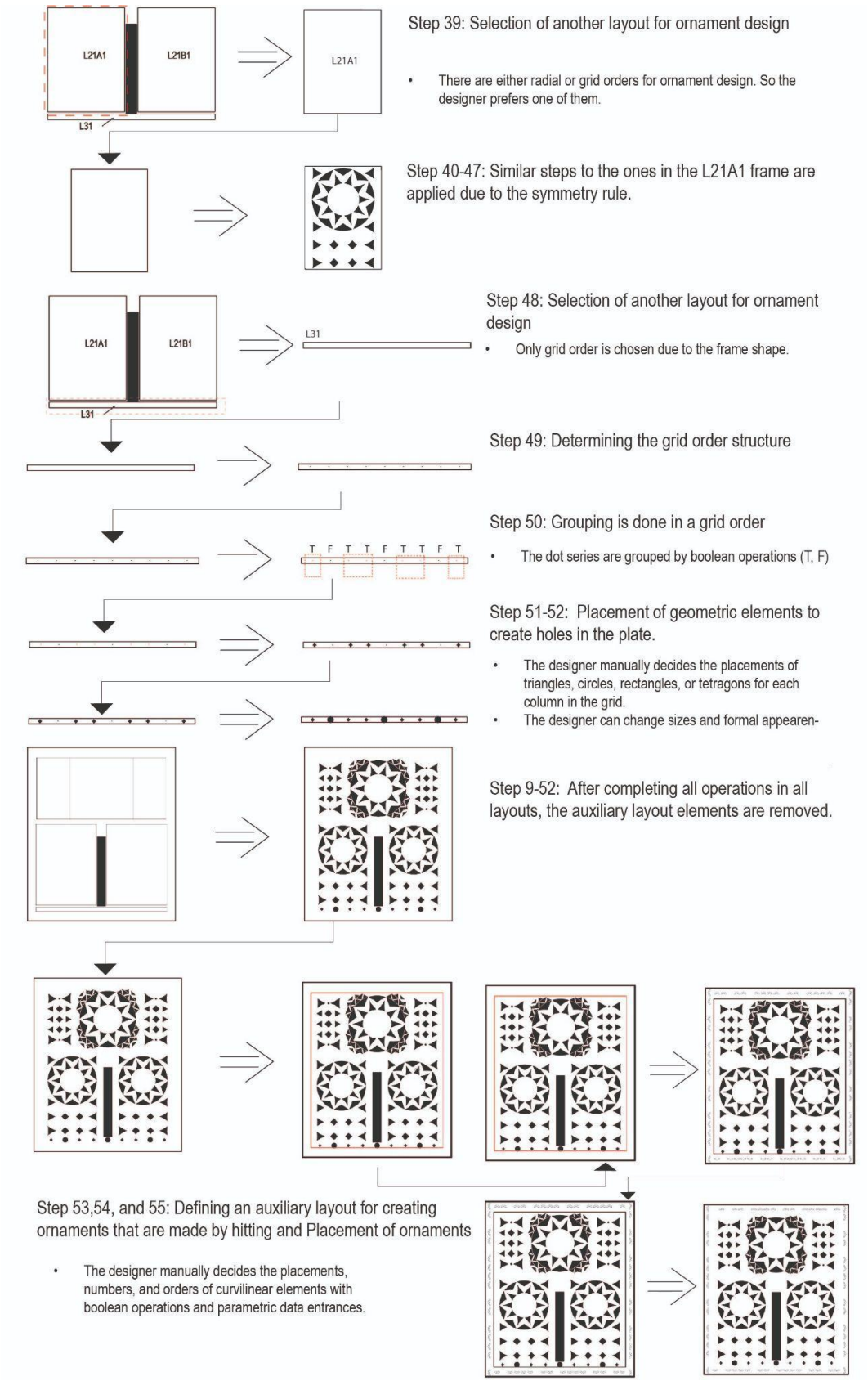


Figure 7 (continued). The ornament design process for the rectangular plate

The geometric elements in the patterns are shape elements and vocabularies. Centers of these elements, the points used for their placements in the grid order, and Boolean sets (true and false) affecting their creations are shaped rule sets. After choosing one of the elements as an initial shape, the other elements are placed on the grid or radial order according to the rule set, and thus a new shape set is obtained. This set becomes one of the new rules as subtraction elements to be used for raw iron plate, which is the initial shape. At the end of the process, after completing and applying the layout solutions as rules, an ornamented latch mirror emerges.

After or during the design process of the geometric elements for the drilling process in the layout sets, the design of the compositions for the grinding process is started. In the model, around the rectangular main plate, around the key blank or around individual geometric elements, the grinding process is sampled with triangular or quadrilateral-shaped traces in an arc form. The harmony between elements is made through scaling. This process can create grouped arrangements in the model with subtraction applications according to the pattern order defined by the designer through “boolean” operations.

Sample Implementations

Alternative patterns were generated on the latch mirror to expand the ornament repertoire. Some of them resembled the designs of the craftsmen in Safranbolu, while others differentiated. In Figure 7, these patterns were categorized based on the layout. We demonstrated the potential for variation in the interactive model by modifying specific design criteria. These changes were implemented step by step. The processes performed on them can be explained as follows.

In the LG1 layout example, a star symbol created by iterated radial order was positioned. Triangular elements in grid order were set out on the layouts near this element. On both sides of the key blank, basic design elements in the grid are placed in symmetrical order, and different patterns are defined in each row. The external layouts are designed with traces in an arch form and blanks in a circular shape. In the second example concerned with the LG1 layout, circular elements were designed behind the star ornament in the center. In the third example, the new elements were added to the star ornament, and the sizes of elements of the star ornament were changed. In the last example, a design like a star ornament was arranged on both sides of the key blank. Here, the elements in the existing grid order that collided with the new star ornaments were deleted as stated before.

In the second layout design (LG2), the sizes of layout were changed, as shown in the model explanation. Unlike the LG1 layout example, stick elements were preferred in both radial and grid ornaments. Around some basic elements, more knocking examples were applied. The key blank radial orders were designed on both sides in this layout example. In addition, the patterns next to the star ornament are different from the others. The design approaches of LG2-Ex2, LG2-Ex3, and LG2-Ex4 are very similar, but there are differences in the numbers and sizes of the used elements in each of them. In this LG2 layout example, different alternatives were generated on the exterior layouts.

In the third alternative (LG3), all layouts consist solely of grid layout examples. The grid layout has definitions for various types and sizes of elements in specific rows.

In the fourth alternative (LG4), all layout examples feature a combination of grid and radial arrangement patterns. These examples not only showcased the integration of different patterns but also demonstrated variations in the placement of radial arrangement examples at the top, middle, or bottom. Although the approach remained consistent in the grid arrangement, some elements in the arrangement have been modified, their dimensions varied or transformed into curvilinear forms. This type also included an example of forging within some internal layouts.

In the last type of layout (LG5), entirely new layouts were created. These layouts offer solutions that are in harmony with the overall design. In the examples, the numbers and sizes of the elements that defined the star shape changed gradually. Also, different compositions of quadrilateral elements were tried.

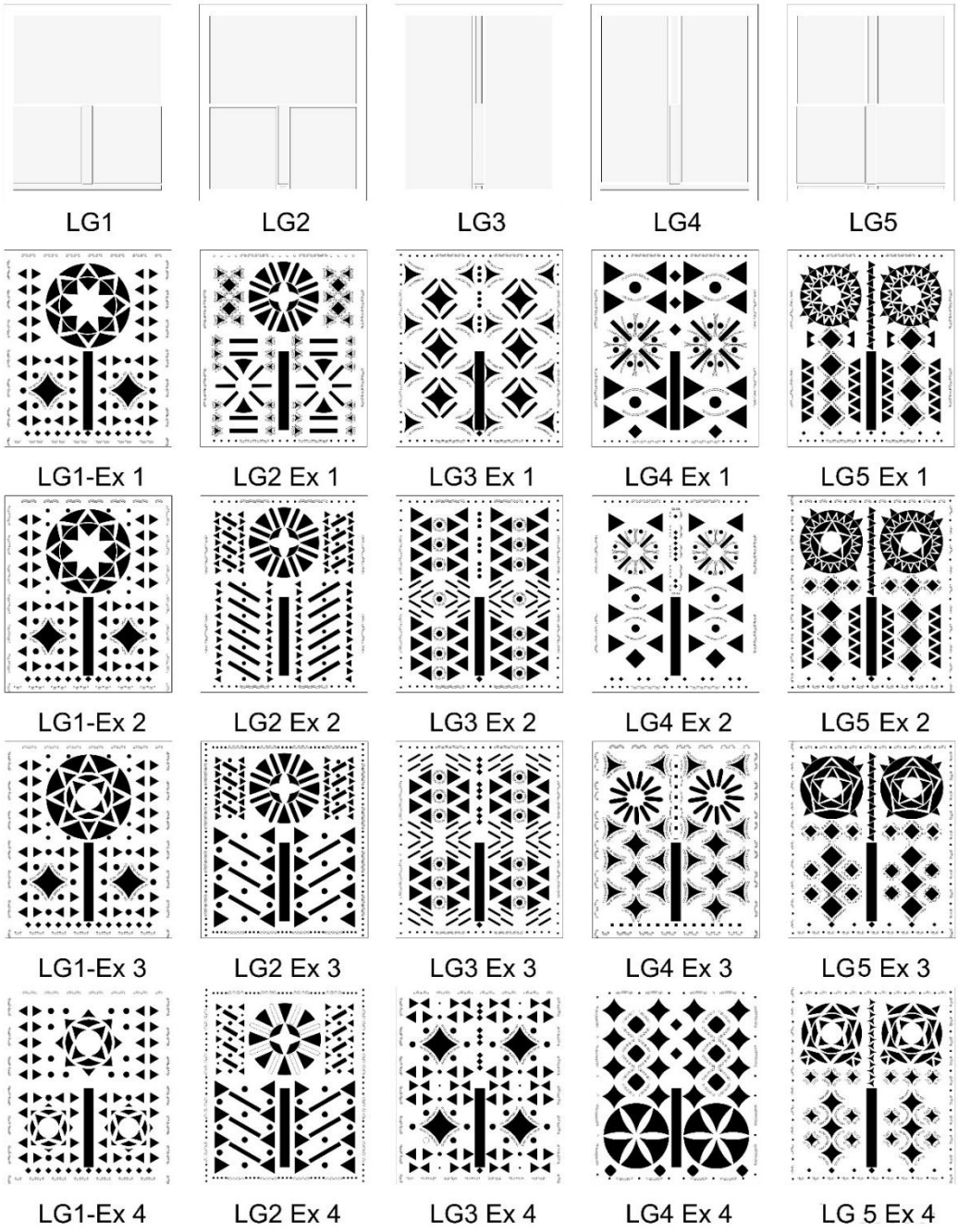


Figure 8. Alternative pattern practices

CONCLUSION

The knowledge acquired by craftsmen through the master-apprentice relationship has persisted to the present day with little or no alteration. However, as craftsmen adhere to traditional methods, they may require assistance developing new techniques, which could eventually challenge their ability to sustain craft production in Safranbolu. Thus, for the development of new products, the study begins by conducting a morphological analysis of latch mirror patterns on a doorknocker, an example of traditional craftsmanship, using the shape grammar approach. This analysis aims to ascertain the feasibility of new product development. Drawing from the designer's subconscious knowledge, this analysis employs a language structured by parametric design tools, enabling the generating of new variations. Ultimately, the study provides a

mathematical representation of tacit knowledge in a craftsman's design comprehension and seeks to support craftsmen in harnessing modern production methods to foster their products. As a result, the latch mirror patterns appear to be similar to each other with limited compositional elements; however, analysis experience has shown that there is a potential diversity with minor variations in the existing examples.

The implementation phase, the second step of the study, has demonstrated that the dimensional or formal differences in the arrangements made by puncturing, voiding, or knocking and the spatial differences in how the elements get together can increase the corpus of variations. The rules among the elements are flexible, and open to development according to design conditions. In other words, the probability, and rules of putting the basic elements together in this study can be increased by "seeing" and "doing" approaches. The craftsman can enrich the design configuration by adding new rules and making interventions for the next step after evaluating the design produced in the previous phase. There is no constraint between them. The ornaments in the craftsmen's implementations have a determined grid or radial order. There is very little randomness. In the repetitions, grid and radial orders have been restrictive criteria. In the model, the generation areas were defined for ornament. As mentioned before, the latch surfaces can be parametrically segmented into larger or smaller areas for generation. These segmentations define newly grouped basic design elements on the upper scale. Expanding alternative ways contributes to holistic design variations. These elements, whose basic limits are determined, provide ease of creating a whole for designers. Thus, besides allowing flexibility, the model leads designers to think systematically about the steps in a craftsman's production process.

When the latch mirror ornaments are considered together with the main shape of the doorknocker and its other components, the scope of this corpus will expand further. It is possible to say that these alternative proposals can, at the same time, become data that can be evaluated in today's popular machine-learning processes and AI implementation.

Authors' Contributions

The authors contributed equally to the study.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

It is not a study that requires ethics committee approval.

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Figure References

Figure 1: Göktaş-Kaya, L. (2010). Geleneksel kapı halka ve tokmakları: Safranbolu. *ZKÜ Sosyal Bilimler Dergisi, 6*(12), 341-369.

Figure 2, 3: Author's personal archive, 2023.

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Research Article

Afet sonrası kullanılan geçici barınaklarda termal konforun sağlanmasına yönelik iyileştirme örnekleri

Examples of improvements to ensure thermal comfort in temporary shelters used after disasters

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Özet

Afet sonrası geçici barınaklarda kalan insanlar için küçük bir metrekarede yaşamanın yanı sıra yaz sıcağı ve kış soğuğu gibi iklimsel parametrelerle mücadele edebilmek ve iç ortam termal konfor şartlarını sağlayabilmek en temel gereksinimdir. Ancak kullanılan mevcut geçici barınma ünitelerinde bu koşullar tam manasıyla sağlanamamaktadır. Bu çalışmada Türkiye'de ve dünyada geçici barınma ünitelerinde termal konfor şartlarının iyileştirilmesi adına yapılmış çalışmalar incelenmiştir. Bu konuyla alakalı literatür taranmış, nicel ve nitel karma bir veri toplama yöntemi ile elde edilen veriler sistematik bir biçimde ortaya konulmuştur. Bu sayede afet sonrası süreçte kullanılan barınaklarla ilgili yeterli bilgi birikiminin oluşarak geçici barınma ünitelerinin tasarımında bütünleşik bir tasarım sürecinin oluşturulması ve mekânsal, teknik ihtiyaçların yanında iklimsel faktörler ve termal konfor şatlarının da göz önünde bulundurulmasına dikkat çekilmesi amaçlanmıştır. Bu hedeflerle ortaya konulmuş olan çalışmada, geçici barınma ünitelerinde iklimsel problemlerin giderilmesi ve termal konfor şartlarının sağlanması adına yapılmış çalışmalar dört başlık altında sınıflandırılmıştır. En ekonomik ve sürdürülebilir yaklaşımın mevcutta kullanılan geçici barınma ünitelerinin tasarım ve yapı kabuğu anlamında iklim bölgelerini de dikkate alarak güncellenmesinin en doğru yaklaşım olacağı sonucuna varılmıştır.

Anahtar Kelimeler: Afet, Afet sonrası barınma, Geçici barınma ünitesi, Termal konfor

Abstract

In addition to living in a small square meter, coping with climatic parameters such as summer heat and winter cold and providing indoor thermal comfort conditions are the most basic requirements for people staying in temporary shelters after the disaster. However, these conditions cannot be fully met in the current temporary shelter units used. This study examined studies to improve thermal comfort conditions in temporary accommodation units in Turkey and around the world. The literature on this subject was scanned, and the data obtained through a mixed quantitative and qualitative data collection method was presented systematically. In this way, it is aimed to create an integrated design process in the design of temporary shelter units by gaining sufficient knowledge about the shelters used in the post disaster period and to draw attention to the consideration of climatic factors and thermal comfort conditions as well as spatial and technical needs. In the study carried out with these objectives, the studies carried out to eliminate climatic problems and ensure thermal comfort conditions in temporary accommodation units were classified under four headings. It has been concluded that the most economical and sustainable approach would be to update the currently used temporary shelter units, taking into account the climate zones in terms of design and building envelope.

Keywords: Disaster, Post-disaster shelter, Temporary shelter unit, Thermal comfort

Extended Abstract

Introduction: Most disasters that negatively affect human life are natural disasters. Turkey is in a location where natural disasters occur frequently due to its geomorphological and climatic characteristics. Disasters such as earthquakes, landslides and avalanches that have occurred in recent years are only a recent part of them. The material and moral losses experienced after the devastating effects of disasters explain the importance of the post-disaster process. The most important and basic problem for people surviving after a disaster is shelter. Three basic stages are applied for post-disaster shelter. The first of these are tents, which are emergency shelter units. After tents, temporary shelter units come into play. Disaster victims continue their lives in temporary shelter units until their permanent homes are completed. While it was initially expected that this period would vary between 6 months and 3 years, in practice, life in temporary housing may extend up to 5 years. Elements that make life difficult for disaster victims exposed to the devastating effects of the disaster must be eliminated. In this respect, it is essential to provide comfort conditions that will facilitate the adaptation of people who have lost their place to normal life. In practices carried out after disasters, providing comfort conditions based on climatic parameters is generally ignored in our country and in the world. Applications are carried out based on the logic of producing and placing the largest number of temporary shelter units in the fastest way, on areas determined according to criteria such as connection to road axes, infrastructure and ease of transportation. For disaster victims who have to spend a considerable amount of time in temporary shelter units, this situation further aggravates the conditions of this psychologically difficult period and makes the transition to social life difficult.

Purpose and scope: In this study, some examples designed to improve thermal comfort conditions in temporary accommodation units were examined in detail. In this way, it is aimed to create an integrated design process for temporary shelter units and to draw attention to the consideration of climatic factors and thermal comfort conditions as well as spatial and technical needs. For this purpose, firstly, the standards currently used for temporary shelter units in Turkey and the world are briefly explained. Later, the studies carried out to improve the inadequate thermal comfort of temporary shelter units used for reasons such as disaster or war were examined according to certain criteria. According to this a classification was made as follows; Studies using lower and upper limit values determined in different climate regions for indoor temperature as determinants, studies focusing on the thermal comfort improvement performance of shell elements and insulation materials, works using PCM in shell material and shading elements, studies aiming to improve thermal comfort by design.

Method: To achieve the proposed research objectives, a mixed qualitative and quantitative research method was used during this study. While determining the samples in the study, visual information and photographs, which are qualitative research data collection techniques, were used. In the studies, quantitative data collection method was used to evaluate the applications aimed at improving thermal comfort in temporary houses. In this way, it is aimed to include the results in an objective evaluation based on numerical data.

Findings and conclusion: Although many directives in Turkey and around the world emphasize the standards regarding temporary shelter units and explain their importance and what needs to be done, these criteria are not implemented in the field. This makes this process even more difficult for people who managed to survive after the disaster. One of the most important neglected issues in temporary shelter units is that climatic parameters are not taken into account in temporary shelter unit design and settlement planning. In addition to the housing problem, this situation brings with it the necessity of struggling with limited opportunities against seasonal effects such as summer heat and winter cold. Various studies are carried out to ensure thermal comfort in temporary shelter units worldwide. However, these studies lack a systematic order and provide limited data. In fact, it has been determined that in most of the studies, certain climatic parameters are taken into account, but no comprehensive study has been presented. The most important of the results obtained from the studies is that these studies cannot find a place in practice. The existence of thousands of people displaced from their homes due to reasons such as earthquakes, disasters and war, the effects of which we have seen particularly strikingly in recent years, emphasizes the importance of what needs to be done on this issue. Shelter and ensuring thermal comfort in these shelters are of vital importance for people. For this reason, it is very important that the studies carried out to ensure thermal comfort in temporary shelter units for disaster victims show themselves in the field of application.

Keywords: Disaster, Post-disaster shelter, Temporary shelter unit, Thermal comfort

GİRİŞ

Tarih boyunca insanoğlu afetlerin yıkıcı etkisine maruz kalmıştır. Afet kavramı "insanlar ve insan yerleşmeleri üzerinde fiziksel, ekonomik, sosyal ve çevresel kayıplara neden olan, normal yaşamı ve insan faaliyetlerini durdurarak veya kesintiye uğratarak toplulukları etkileyen doğal, teknolojik ve insan kökenli olayların sonuçları" (Ergünay, 1996: 1) şeklinde ifade edilmektedir. Doğal afetler insan yaşamı üzerinde maddi ve

manevi birçok kayba neden olabilmektedir. Türkiye sahip olduğu jeomorfolojik ve iklimsel özellikleri sebebiyle doğal afetlerin sıklıkla yaşandığı bir konumdadır. Son yıllarda peşi sıra meydana gelen depremler, heyelan ve çığ düşmesi gibi felaketler bunların yalnızca yakın tarihli bir kısmıdır. Afetlerin yıkıcı etkilerinin ardından yaşanan maddi manevi kayıplar ise afet sonrası sürecin önemini anlatır niteliktedir. Afet sonrası hayatta kalan insanlar için en önemli ve en temel sorun barınmadır.

Afet sonrası barınma için üç temel aşama uygulanır. Bunlardan ilki acil barınma üniteleri olan çadırlardır. Çadırlardan sonra ise geçici barınma üniteleri devreye girmektedir. Afetzedeler, kalıcı konutları tamamlanıncaya kadar yaşamlarını geçici barınma ünitelerinde sürdürmektedir. Başlangıçta bu sürenin 6 ay ile 3 yıl arasında değişmesi öngörülürken pratikte geçici konutlarda yaşam 5 yıla kadar uzayabilir (Tan & Tan, 2021). Yaşanan afetin yıkıcı etkilerine maruz kalan afetzedeler için yaşamı güçleştiren unsurların ortadan kaldırılması gerekmektedir. Yaşadıkları yeri kaybeden insanların normal yaşama adaptasyonunu kolaylaştıracak konfor şartlarını sağlamak bu açıdan elzemdir. Türkiye'de geçici barınma üniteleri olarak çoğunlukla konteynerler kullanılmaktadır. Konteyner kentlerde yaşamak durumunda kalan insanlar için küçük bir metrekarede yaşamak zorunda olmanın yanı sıra yaz sıcağı veya kış soğuğu gibi iklimsel problemlerle mücadele edebilmek, iç ortam hava kalitesini iyileştirebilmek sürdürülebilir bir barınma ihtiyacı için en temel gereksinimdir. Ancak iklim duyarlılığını teşvik eden yönergeler olmasına rağmen, afet/savaş sonrası kullanılan acil ve geçici barınma ünitelerinde insanlar için gerekli konfor şartlarının sağlanması çoğunlukla mümkün olmamaktadır.

Afet sonrası yapılan uygulamalarda, genellikle iklimsel parametrelere dayalı konfor şartlarının sağlanması göz ardı edilmekte; yol akslarına bağlantı, altyapı ve ulaşım kolaylığı gibi kıstaslara göre belirlenen alanlar üzerinde en fazla sayıda geçici barınma ünitesinin en hızlı şekilde üretilmesi ve yerleştirilmesi mantığına dayanan uygulamalar gerçekleştirilmektedir. Azımsanamayacak bir süre zarfını geçici barınma ünitelerinde geçirmek zorunda kalan afetzedeler için, psikolojik olarak zor olan bu dönemin şartlarını daha da ağırlaştırmakta ve sosyal hayata geçiş sürecini güçleştirmektedir. Bu çalışmada ülkemizde ve dünyada geçici barınma ünitelerinde termal konfor şartlarının iyileştirilmesi adına yapılmış bazı örnekler detaylı olarak incelenmiştir. Bu şekilde geçici barınma ünitelerinin tasarımında bütünleşik bir tasarım sürecinin oluşturulması ve mekânsal, teknik ihtiyaçların yanında iklimsel faktörler ve termal konfor şartlarının da göz önünde bulundurulmasına dikkat çekilmesi amaçlanmıştır.

Afet Kavramı ve Afet Sonrası Barınma

Doğal veya beşerî nedenlerle meydana gelen afetler, insanoğlunun ilk var olduğu zamanlardan günümüze değin devam etmektedir. Afetlerin insan yaşamı üzerinde pek çok yıkıcı etkisi bulunmaktadır. Bu bağlamda afet kavramı "insanlar için fiziksel, ekonomik ve sosyal kayıplar doğuran, normal yaşamı ve insan faaliyetlerini durdurarak veya kesintiye uğratarak toplulukları etkileyen doğal, teknolojik veya insan yapısı kökenli olaylar" şeklinde ifade edilmektedir (Ergünay, 1998: 3). Afet kavramının sözlük tanımı ise; "çeşitli doğa olaylarının sebep olduğu yıkım" şeklinde ifade edilmektedir (TDK, t.y.). Bu tanımdan hareketle herhangi bir sebeple, doğal veya beşerî nedenlerle, meydana gelen bir olayın afet olarak tanımlanabilmesi için insan yaşamı üzerinde olumsuz etkilere neden olması, insan faaliyetlerini sekteye uğratması ve yerleşim yerleri üzerinde yıkıcı etkiler bırakması gerekmektedir. Bu bağlamda afetin bir olaydan çok olayın neden olduğu sonuçlar bütünü olduğunu belirtmek mümkündür (Acerer, 1999). Başka bir ifadeyle ise afet, bireylerin ve grupların, içinde yaşadıkları toplumsal bağlamda bir bozulma veya normal beklenti kalıplarından radikal bir sapma olarak tanımlanmaktadır (Songür, 2000).

Doğal afetlerin önceden tahmin edilmesi mümkün olmasa da zararları en aza indirmek için önlemler alınabilir (Şahiner, 2022). Afetlerin meydana geldiği bölgede yalnızca insanlar değil birçok canlı türü de etkilenmektedir. Bu nedenle afetlerin yıkıcı etkileri gerek maddi gerekse manevi açıdan pek çok kayba sebebiyet vermektedir. Afetlerin sebep olduğu yıkıcı etkinin büyüklüğünü etkileyen nedenler Tablo 1'de sunulmuştur (Ergünay, 1998; İlhan, 2010).

Tablo 1. Afetlerin sebep olduğu yıkıcı etkinin büyüklüğünü etkileyen nedenler

▪ Olayın fiziksel büyüklüğü
▪ Olayın yoğun yerleşme alanlarına olan uzaklığı
▪ Fakirlik ve az gelişmişlik
▪ Hızlı nüfus artışı
▪ Tehlikeli bölgelerdeki hızlı ve denetimsiz şehirleşme ve sanayileşme
▪ Ormanların ve çevrenin tahribi veya yanlış kullanımı
▪ Bilgisizlik ve eğitim eksikliği
▪ Toplumun afet olaylarına karşı önceden alabildiği koruyucu, önleyici ve risk azaltıcı önlemlerin ulaşabildiği düzey

Belirtilen maddelerden hareketle doğal afetlerin önlenmesi mümkün olmasa da etkilerinin azaltılmasının alınacak tedbirlerle mümkün olduğu görülmektedir. Bu bağlamda afet öncesi ve afet sonrası süreçte alınacak önlemler ve yapılacak iyileştirmeler afetlerin neden olduğu yıkıcı etkilerin azaltılmasında etkin rol oynayacaktır. Doğal afetler; çığ, heyelan, volkanik hareketler, biyolojik salgınlar, don gibi sıralanabilmektedir. Görsel 1'de sunulan haritada belirtildiği üzere, kara sınırlarının %97'si deprem bölgesi üzerinde bulunan Türkiye'de ise en çok yaşanan ve dolayısıyla yıkıcı etkisi en fazla hissedilen doğal afet depremdir (Savaşır, 2008). 6 Şubat'ta Kahramanmaraş merkezli yaşanan ve 11 ili etkileyen deprem bunun en yakın tarihli örneği niteliğindedir.

Görsel 1. Türkiye deprem risk haritası

Yaşanan felaketlerin yıkıcı etkileri en fazla konutlar üzerinde görülmektedir. Bu bağlamda meydana gelen afetler, gerisinde afetin neden olduğu psikolojik tahribatın yanında yaşadıkları konutu kaybetmiş pek çok afetzede bırakmaktadır. Bu durum hayatta kalmayı başarabilmiş afetzedeler için afet sonrası süreçte çözülmeyi bekleyen en önemli sorunu barınma haline getirmektedir. Günümüzde afetten sonra kullanılan barınma üniteleri, insanların en öncelikli ihtiyaçlarına cevap verebilen barınaklardan ilham alır şekilde tasarlanmaktadır (Uzut, 2016). Afet sonrası barınma hayatta kalan insanların ilk etapta öncelikli ihtiyaçlarının karşılanmasına yönelik olup, üç etapta planlanmaktadır (İlhan, 2010). Bu aşamalar sırasıyla acil barınma, geçici barınma ve uzun süreli barınma şeklindedir (Görsel 2).

Görsel 2. Afet sonrası barınma aşamaları

Afeti izleyen en kısa süre içinde, afetzedelere barınak sağlanması acil barınma kavramı içinde ele alınmalıdır. Acil barınma amaçlı kullanılan çadırların en önemli özelliği kısa sürede kurulabilir ve taşınabilir nitelikte olmasıdır. Hayati öneme sahip olan afet sonrası ilk 24 saat içerisinde hazırlanan bu yapıların, hızlı kurulum özelliklerine karşın dayanımları çok yüksek değildir. Bu nedenle olumsuz şartlar altında en az bir hafta, şartların olumlu olması halinde ise en fazla bir ay kullanıma müsait niteliktedirler (Ervan, 1995) (Görsel 3).

Geçici barınma, acil barınaklardan sonra, afet nedeniyle yıkılmış konutların yerine yenilerinin yapılması ve az hasarlı konutların iyileştirilmesi, oturulabilecek hale getirilmesiyle sağlıklı sosyal bir yapının tekrar oluşturulmasına kadar geçen süreyi kapsar. Geçici barınak normal yaşam koşullarının olabildiğince sağlanmaya çalışıldığı geçici bir çözümdür (Görsel 4). Uluslararası platformlarda, afetten etkilenen bölgelerde geçici konut yapımı genellikle yıllar boyu büyük bir tartışma konusu olmuştur. Ana sebep ise, bu konutların yaşam sürecinin kontrolündeki zorluklar ve bu kullanım periyodunun aşılması halinde gerçekleşen istenmeyen olaylar olarak ortaya konmaktadır. Tüm yerel ve uluslararası tartışmaların ışığında, bu konutların, genel anlamda toplumda iyileşmenin sağlanabilmesine yönelik en can alıcı parça olduğu ve afet meydana gelen çoğu bölgede, yeniden yapım programının yerine getirilmesinde önemli bir olumlu etki sağladığı düşünülmektedir (Bektaş, 2004). Uzun süreli barınma ise uzun süreli barınma için yapılan konutlar ile sağlanır. Kalıcı konutlar, afet sonrasında konutları yıkılan ya da ağır hasara uğrayan insanlara eski konutlarının yerine, aynı yerde ya da başka yerde yeniden inşa edilen konutlardır (Enginöz, 2005).

Görsel 3. 6 Şubat Kahramanmaraş depreminden sonra Kahramanmaraş'ta kurulan çadırlar

Görsel 4. 6 Şubat'ta Kahramanmaraş depreminin ardından farklı şehirlerde kurulan konteyner kentler

YÖNTEM

Bu çalışmada geçici barınma ünitelerinde termal konfor şartlarının iyileştirilmesi adına yapılmış bazı örnekler detaylı olarak incelenmiştir. Bu şekilde geçici barınma üniteleri için bütünleşik bir tasarım sürecinin

oluşturulması ve mekânsal, teknik ihtiyaçların yanında iklimsel faktörler ve termal konfor şatlarının da göz önünde bulundurulmasına dikkat çekilmesi amaçlanmıştır.

Önerilen araştırma hedeflerine ulaşmak için bu çalışma sırasında karma niteliksel ve niceliksel bir araştırma metodu kullanılmıştır (Asfour, 2019). Çalışmada örnekler belirlenirken nitel araştırma veri toplama tekniklerinden olan görsel bilgiler ve fotoğraflardan yararlanılmıştır. Çalışmalarda GBÜ'lerde termal konforun iyileştirilmesine yönelik uygulamaların değerlendirilmesi için ise nicel veri toplama yönteminden yararlanılmıştır. Bu şekilde sonuçların sayısal verilere dayalı olarak objektif bir değerlendirmeye dâhil olması amaçlanmıştır.

Bu amaçla ilk olarak Türkiye'de ve dünyada geçici barınma üniteleri için mevcutta kullanılan standartlar kısaca açıklanmıştır. Daha sonra afet veya savaş gibi nedenlerle kullanılan geçici barınma ünitelerinin yetersiz kalan termal konforunu iyileştirmek üzere yapılan çalışmalar belirli kriterlere göre incelenmiştir. Buna göre;

- İç ortam sıcaklığı için farklı iklim bölgelerinde belirlenen alt ve üst sınır değerleri belirleyici olarak kullanan çalışmalar,
- Kabuk elemanları ve yalıtım malzemelerinin termal konforu iyileştirme performansı üzerine odaklanan çalışmalar,
- Kabuk malzemede ve gölgeleme elemanlarında FDM kullanılan çalışmalar,
- Tasarımsal olarak termal konforun iyileştirilmesini amaçlayan çalışmalar

şeklinde bir sınıflandırma yapılmıştır.

BULGULAR

Geçici Barınma Üniteleri İçin Dünyada ve Türkiye'de Geçerli Olan Standartlar

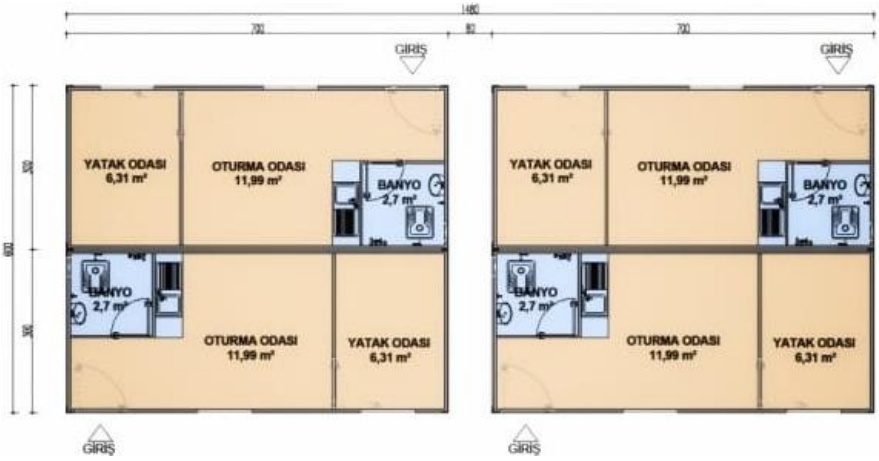
Afet/savaş gibi nedenlerle yerinden edilen insanlar, kalıcı konutları tamamlanıncaya kadar ki süreci geçici barınma ünitelerinde geçirmek durumundadırlar. Yuva dedikleri mekânı kaybeden insanlar için tekrardan yaşama adapte olabilmek beraberinde psikolojik ve fizyolojik pek çok güçlüğü getirmektedir. Küçük bir metrekarede hayatlarına devam eden insanlar için bu süreçten sonra en önemli sorunlardan biri yaz sıcağı ve kış soğuğu gibi iklimsel zorluklarla baş edebilmektir. Geçici barınma ünitelerinde genellikle kurulum aşamasında göz ardı edilen termal konfor, içindeki yaşamın 2 bazen de 5 yıla kadar uzadığı durumlar için çoğunlukla kullanıcıların çabaları ile sağlanmaya çalışılmaktadır.

Dünya genelinde afet durumlarında en ince detayına kadar bir barınma alanın sahip olması gereken nitelikler Sphere Projesi İnsani Yardım Sözleşmesi ve İnsani Yardımda Asgari Standartlar (2011) ile açıklanmaktadır. Buna göre su temini standardı, dışkı imhası ile tuvalet tasarım ve standartları, katı atık kontrolü, katı atıklar için çukurlar, drenaj çalışmaları, besin sağlanması, yiyecek maddelerinin kalitesi ve güvenliği, yiyecek maddelerinin uygunluğu, beslenme ihtiyacı standardı, kıyafet standartları ve ev eşyaları standartları gibi pek çok yaşamsal ihtiyacın geçici barınaklarda sağlanmasına yönelik asgari ölçütleri belirlenmiştir. Sphere Projesi'ne göre; sıcak ve nemli bölgelerde kurulan barınakların iyi havalandırılabileceği ve doğrudan güneş ışığına maruz kalmayacak şekilde konumlandırılmış olması gereklidir. Aynı zamanda bu iklim bölgelerinde, barınakları serin tutan malzemelerin kullanılması gerekirken, yağmur suyunun akması için çatının eğimli ve çıkıntılı olması gerekmektedir. Ayrıca barınakların hava akımının iyi olması için diğer barınaklarla arasında mesafe bırakılmalıdır. Sıcak ve kuru bölgelerde kurulan barınakların ise gece gündüz sıcaklığının değişmesiyle birlikte içerisinin ısınması ve soğumasını sağlayacak malzemelerden yapılması ve pencerelerin küçük olması gerekmektedir. Barınma çadır veya plastik örtülerle yapılıyorsa çatı aralarından hava akımının geçişi ve ısı transferinin önlenmesi amacıyla çift tabaka yapılmalıdır. Soğuk bölgelerde kurulan barınakların iyi bir şekilde yalıtılmış olması gerekmektedir. Barınaklar içerisinde kurulan ısıtıcıların kurulumu ve kullanımı son derece önemlidir. Ayrıca barınağın kapısının konumu da içerideki sıcaklığı etkileyecektir. Barınağın havalandırılmasın minimum düzeyde olması gerekir ve bu alanlarda barınacak olan afetzedelere gerekirse ekstra battaniye ve yorgan temininde bulunulmalıdır (Taylan, 2018).

Türkiye'de ise afet durumlarından sonra ikinci aşamada kullanılan geçici barınma ünitelerinin (GBÜ) yerleşim şeması için Afet ve Acil Durum (AFAD) yönetimi tarafından ortaya konulan Geçici Barınma Merkezlerinin

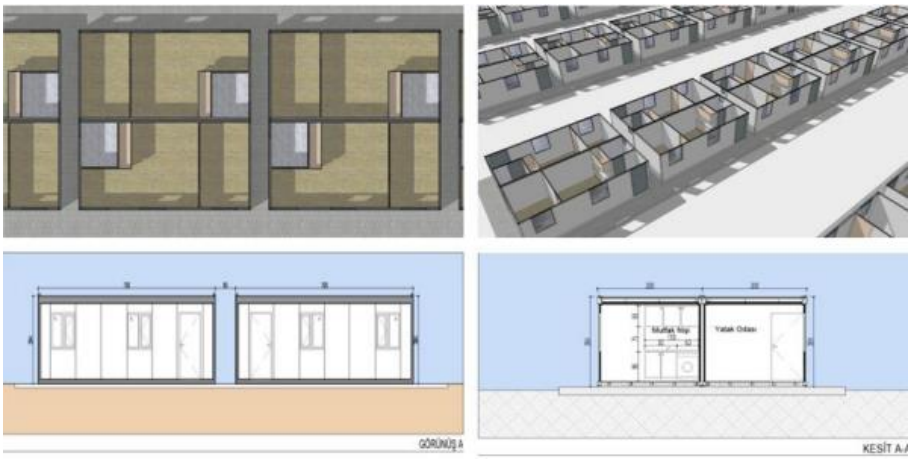
Kurulması, Yönetimi ve İşletilmesi Hakkında Yönergede (2015) hem barınakların hem de onların bir araya gelmesi ile oluşan yerleşim alanlarının fiziksel koşulları hakkında bazı çerçeveler belirlenmiştir. Buna göre geçici barınma merkezlerindeki ana yolların genişliğinin en az 15 m, ara yolların genişliğinin ise en az 10 m olması, GBÜ'lerin iklim şartlarına ve yangın standartlarına uygun malzemeden yapılması, kişi başına düşen kapalı alan miktarının 3,5-4,5m^2 arasında olması gerekmektedir.

Türkiye'de geçici barınma ünitesi olarak yaygın kullanılan birimleri konteynerler oluşturmaktadır. AFAD Teknik Şartnamesinden alınan verilere göre, Görsel 5'te planları verilmiş olan tip konteynerlerin standart ebadı 21m^2 (3x7) büyüklüğünde olup dış duvarları dıştan 0,4 mm, içten ise 0,35 mm galvanizli sacdan sandviç paneldir. Yalıtım malzemesi olarak ise 5 cm kalınlığında poliüretan köpük kullanılmaktadır. Bu duvarların ısı iletkenlik değeri 0,44 W/m²K'dir. Döşeme sistemi ise, sıkıştırılmış toprak üzerine grobetondan oluşmaktadır (Geçici Barınma Merkezlerinin Kurulması, Yönetimi ve İşletilmesi Hakkında Yönerge, 2015).



Görsel 5. Elazığ Aşağı Holpenk Köyünde kurulan konteyner yaşam alanına ait konteyner planları

Görsel 6'da Türkiye'de mevcutta uygulanan yerleşim şemaları ile ilgili bir örnek sunulmuştur. Buna göre barınma ünitelerinin uzun cepheleri sırt sırta verilmiş, uzun cepheye paralel yol genişlikleri yeterli görünse de, kısa cepheler arası mesafenin çok dar olduğu gözlenmektedir. Bu yerleşim planlamasına göre, barınma ünitelerinin en az yarısının ısıl konfor açısından yeterli bir ortam sunamayacağı öngörülmektedir. Dikdörtgen forma sahip olan barınakların genellikle uzun cepheleri sırt sırta yerleştirilmiştir. Bu nedenle yerleşim alanında bulunan barınakların yarısının bulunulan iklim bölgesine göre doğru yönlendirilme ihtimali doğmuş olsa bile, diğer yarısının tam tersi şekilde ve dolayısıyla yanlış yönlendirilmiş olması muhtemeldir.



Görsel 6. Elazığ Aşağı Holpenk Köyünde konteyner yaşam alanına ait görseller

Geçici Barınma Ünitelerinde Termal Konforun Sağlanmasına Yönelik İyileştirme Örnekleri

Çalışmanın bu bölümünde dünyada yer alan farklı iklim bölgeleri için mevcutta uygulanan GBÜ'lerin termal konforunu iyileştirmek amacıyla yapılan çalışmalardan örnekler sunulmuştur.

İç ortam sıcaklığı için farklı iklim bölgelerinde belirlenen alt ve üst sınır değerleri belirleyici olarak kullanan çalışmalar

Son yıllarda dünyada yıkıcı afetlerin yaşandığı farklı iklim özelliklerine sahip lokasyonlara özgü, geçici barınma ünitelerinde termal konforun iyileştirilmesine kılavuzluk etmek amacıyla yapılan çalışma sayısı artış göstermiştir. Tuladhar ve diğerleri (2019), dünyanın farklı ülkelerinde en çok kullanılan 14 GBÜ'nün sağladığı ısıl konfor sınırlarını 13 farklı iklim bölgesi için, 35ºC'yi üst sınır 12ºC'yi de alt sınır kabul ederek analiz etmiştir. Analizler simülasyonlar üzerinden yapılmıştır. Birçok simülasyon sonucunda barınakların belirlenen ısıl emniyet sınır değerlerinin dışında, ısıl konforu sağlamayan iç ortam verileri sunduğu görülmüştür. Thapa ve diğerleri (2019), Nepal-Lalitbur'da 2015 depreminden sonra kullanılan 5 farklı tip geçici barınak için iç ortam ısıl konfor analizleri yapmıştır. Gece boyunca ölçülen ortalama iç ve dış hava sıcaklıkları sırasıyla 10,3 °C ve 7,6 °C olarak bulunmuş ve gece iç hava sıcaklığı kabul edilebilir en düşük sıcaklık olan 11 °C'nin altında kalmıştır. Çalışmada ısı kayıplarını azaltmak üzere farklı malzemelerin kullanıldığı sayısal analizler yardımıyla öneriler geliştirilmiştir. Moran ve diğerleri (2021), çöl ikliminde inşa edilen 12 geçici barınakta, kullanıcıların ısıl konforu iyileştirmek için kendi varyantlarını kullandıkları bir çalışma gerçekleştirmiştir. Diğer bir taraftan ise, aynı barınaklar için ısıl bir modelleme gerçekleştirilip, elde edilen sonuçlar karşılaştırılmıştır. Sonuç olarak modelleme daha hızlı ve daha az iş gücü ile sonuca ulaştıran bir yöntem olsa da, kullanıcının kendi emeği ile ısıl konforu iyileştirmeye yönelik çabasının sürece uyum sağlama açısından daha avantajlı olduğu vurgulanmıştır. Obyn ve diğerleri (2015) acil barınma ünitelerinde iç ortam termal konfor şartlarını iyileştirmek ve yakıt tüketiminin azaltılmasına yönelik olarak sayısal bir çalışma yapmışlardır. Bunun sağlanması adına Energy+ yazılımı kullanılarak acil barınaklarda kullanılan kumaşların hava ve ışık geçirgenliği gibi özellikleri dikkate alınarak bir simülasyon elde edilmiştir. Yapılan sayısal analizler farklı iklim koşullarında acil barınakların termal performansı üzerine geçerli veriler sağlamıştır. Ayu ve diğerleri (2019), bir deprem ülkesi olan Endonezya'nın nem ve tropikal iklim koşullarını göz önünde bulundurarak mevcut geçici barınma ünitelerinde termal iletkenlik değeri, ünite içerisindeki termal davranış ve oda sıcaklığındaki değişimleri incelemiştir. Geçici barınma üniteleri Rhinoceros ve Grasshopper yazılımları kullanılarak simüle edilmiştir. Yapılan analizler sonucunda geçici barınma ünitelerinde kullanılan malzemeye bağlı olarak ölçülen değerlerde termal iyileşmeler kaydedilmiştir.

Kabuk elemanları ve yalıtım malzemelerinin termal konforu iyileştirme performansı üzerine odaklanan çalışmalar

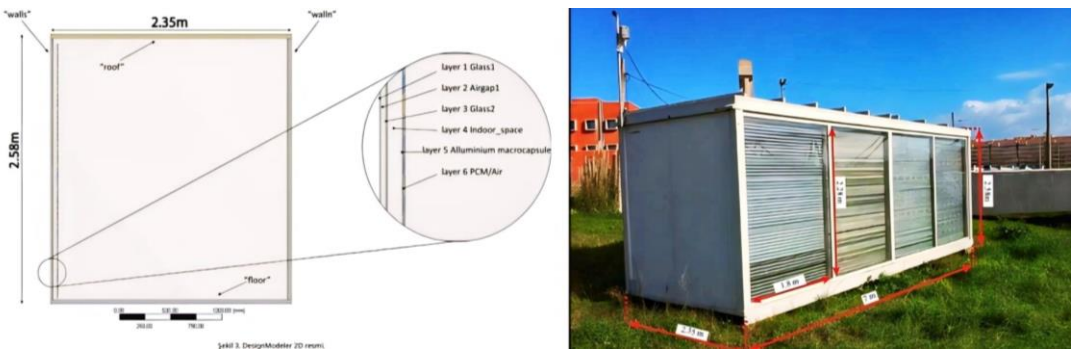
Geçici barınma ünitelerinde kabuk malzeme üzerinde yapılan çalışmalar termal konforun iyileştirilmesi adına oldukça önem taşımaktadır. 2008 ve 2013 yıllarında Çin'de meydana gelen 7 şiddetinin üstünde depremler sonrasında, kalıcı konutlara geçinceye kadarki süreçte barınaklarda yaşayan insanların, mevsimsel koşullardan fazlasıyla etkilendiği gözlenmiştir. Barınak sakinlerinin yazın aşırı sıcak ve nemden, kışın ise soğuk ve sert rüzgârdan etkilenmesinin, onları hem fiziksel hem de psikolojik olarak olumsuz etkilediği belirlenmiştir. Bu nedenle barınaklarda termal konforun ve dengeli havalandırmanın sağlanabilmesi adına birtakım iyileştirme çalışmalarına gidilmiştir. Yu ve diğerleri (2016) tarafından gerçekleştirilen çalışmada, geliştirilen barınak tasarımında kabuk iyileştirmesinin yapılması ile termal iyileştirme sağlanmıştır. Bu amaçla çalışmada, Görsel 7'de test prototipleri verilmiş olan, bir ailenin yaşadığı tipik bambu bir barınakta standart yalıtım malzemesi olarak kullanılan XPS yerine polipropilen levha kullanılmıştır. Kullanılan bu yeni kabuk malzemesinin daha ucuz ve rüzgâra karşı daha etkili olduğu belirlenmiştir. Aynı zamanda hava kabarcıkları içeren bu yeni malzemenin ısıl performansının daha yüksek olduğu belirtilmiştir. Görsel 8'de gösterildiği üzere çatı malzemesi olarak farklı malzemeler denenmiş olup fiberglas çatı malzemesinin kullanımının daha iyi bir sıcaklık stabilitesi sağladığı görülmüştür. Yapılan tasarımsal iyileştirmeler rüzgâr geçirmezliğe veya havalandırma oranının azaltılmasına da yardımcı olmuştur. Uygulanan yeni sistemlerin tümü sıcaklığı tutma açısından daha iyi bir performans sağlamış ve rüzgâra karşı kuvvetli bir bariyer oluşturmuştur (Yu vd., 2016).

Görsel 7. Farklı yalıtım malzemeleri uygulanarak test edilen bambu barınak prototipleri

Görsel 8. Farklı malzemeler uygulanarak test edilen çatı örnekleri

Kabuk malzemede ve gölgeleme elemanlarında FDM kullanılan çalışmalar

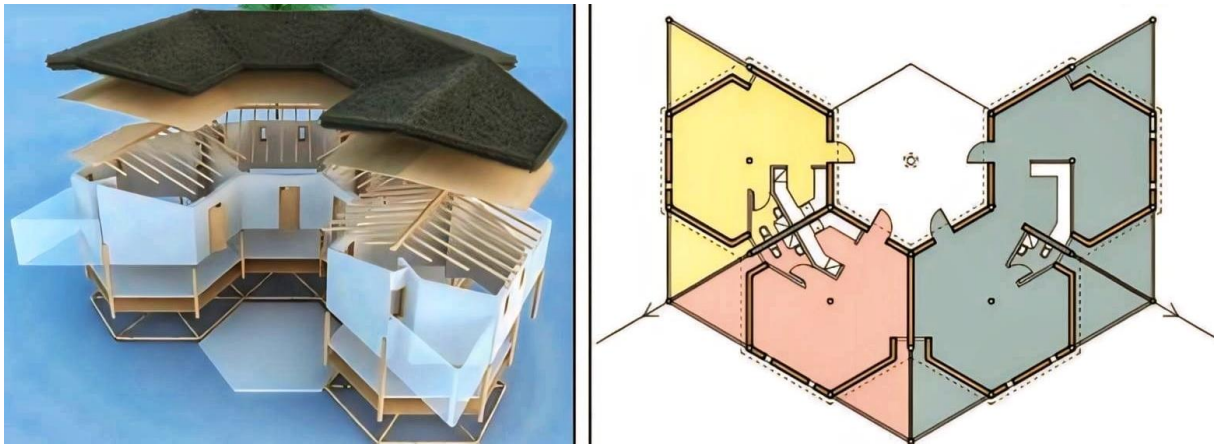
Son yıllarda yenilikçi bir malzeme olarak yapı elemanlarında kullanılmaya başlanan Faz Değiştiren Malzemelerin (FDM) kabuk elemanlarda kullanılması GBÜ'lerin termal konforunu iyileştirmek için başvurulan yöntemlerden biri olmuştur. Wang ve diğerleri (2021) yaptıkları çalışmada genel olarak, FDM'nin geçici barınma ünitelerinin duvar yapısına entegre edilerek kullanılması ve yaz ayları için iç ortam ısıl konforunun iyileştirmesini hedeflemiştir. FDM'nin kompozit duvar elemanındaki konumunun ısıl konforu iyileştirme etkisini değiştirdiği de tespit edilmiştir. Bu uygulama genellikle yaz dönemi için ısıl konforu sağlamaya yönelik olup, kış ayları için pasif bir sistem önerilmemiştir. FDM'li panjurların kullanıldığı geçici barınma ünitesi prototipinde ise ısı kazanç ve kayıplarının en kolay gerçekleştiği pencere elemanı için bir kontrol mekanizması oluşturulmaya çalışılmıştır. Geliştirilen FDM panjurlu konteyner prototipinde, mevcut geçici barınma ünitesinin panjurlarına FDM içeren bir bölme yerleştirilmiştir (Görsel 9). İklimsel koşullar göz önünde bulundurularak ısıtma ve soğutma istenilen dönemlerde gerekli ısıl konforun sağlanması adına mevcutta var olan tasarım modeline yeni bir yaklaşımın geliştirilmesi şeklinde örnekler de mevcuttur. Silva ve diğerleri (2016) tarafından yapılan çalışmada panjur bölmesine yerleştirilen FDM soğutma istenilen dönemde ısıyı depolayıp aşırı ısınmayı önlerken, ısınmanın istendiği dönemde ise depoladığı ısıyı ortama yayarak termal konfor şartlarının sağlanmasına katkı sunmuştur.



Görsel 9. Geliştirilen panjur sistemi çizimi ve oluşturulan test hücresi

Tasarımsal olarak termal konforun iyileştirilmesini amaçlayan çalışmalar

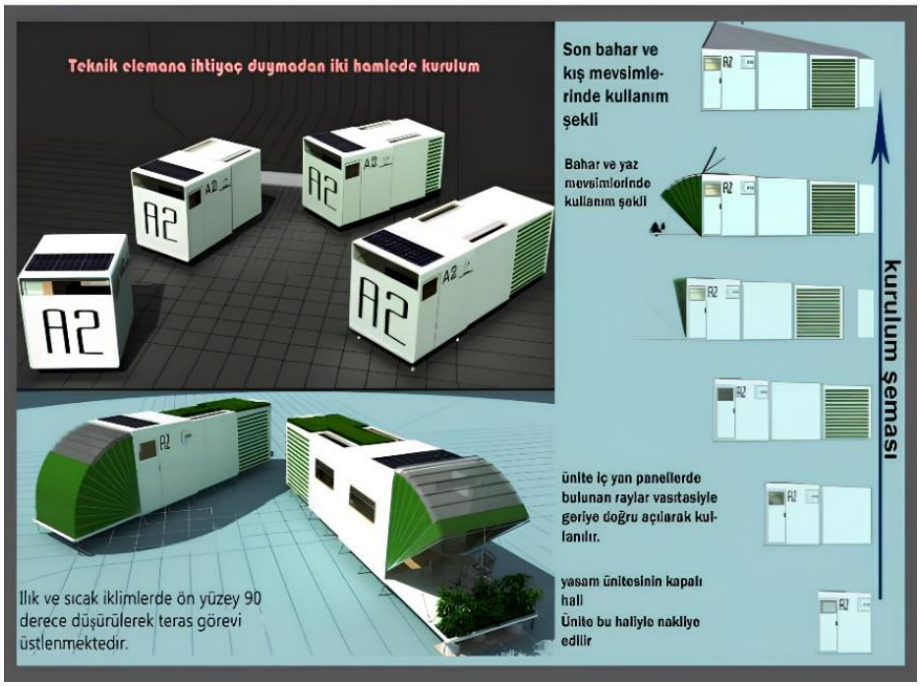
Geçici barınma ünitesi olarak yaygın olarak kullanılan konteynerlerin ya da başka bir tanımlamayla çelik kutuların termal performansının farklı iklim bölgeleri için sunduğu termal konfor yetersizliği bilinmektedir. Yüksek sıcaklık dalgalanmalarının yaşandığı bölgelerde termal konfor şartları göz ardı edilerek yapılan uygulamalar, iç mekânda çok yüksek ve çok düşük sıcaklıkların kaydedilmesine sebep olmaktadır. Bu durum yeni bir tasarım anlayışı ile birlikte sürdürülebilir yapı malzemelerinin de geçici barınma ünitesi üretiminde kullanılabilmesi fikrini doğurmuştur. Bu fikirle Eltawell ve diğerleri (2023) tarafından geliştirilmiş öneri, evlerinden edilen insanların sosyal ve kültürel ihtiyaçları göz önünde bulundurularak oluşturulan esnek bir tasarım anlayışına sahiptir. Aynı zamanda yüksek ısıl dalgalanmaların yaşanmasının önlenmesine karşı yerel ve sürdürülebilir bir tasarım anlayışına gidilmiştir. Görsel 10'da sunulmuş olan bu barınak tasarımında; iç mekân termal konforunu olumlu yönde etkileyebilecek doğal havalandırma ve termal kütle kullanımının önemi vurgulanmaktadır. Bu amaçla tasarlanan acil barınakta yapı malzemesi olarak sıkıştırılmış toprak, pirinç kabuğu külü ve kum torbalarının kullanılması önerilmiştir. Sürdürülebilir malzemelerle tasarlanan barınakta altıgen biçimli esnek bir tasarım anlayışı benimsenerek yerinden edilmiş insanların sosyal tercihlerine saygı duyulması esas alınmıştır. Tasarımcılar Ürdün'ün sıcak iklim koşullarını dikkate almıştır ve barınak tasarımsal olarak rüzgâr tutucu özelliktedir. Aynı zamanda kullanılan yapısal malzemelerin termal performansı; kalınlık, kullanım oranı, konum gibi parametreler dikkate alınarak idealize edilmeye çalışılmıştır (Eltawell vd., 2023).



Görsel 10. Altıgen biçiminde tasarlanan ünite model ve planı

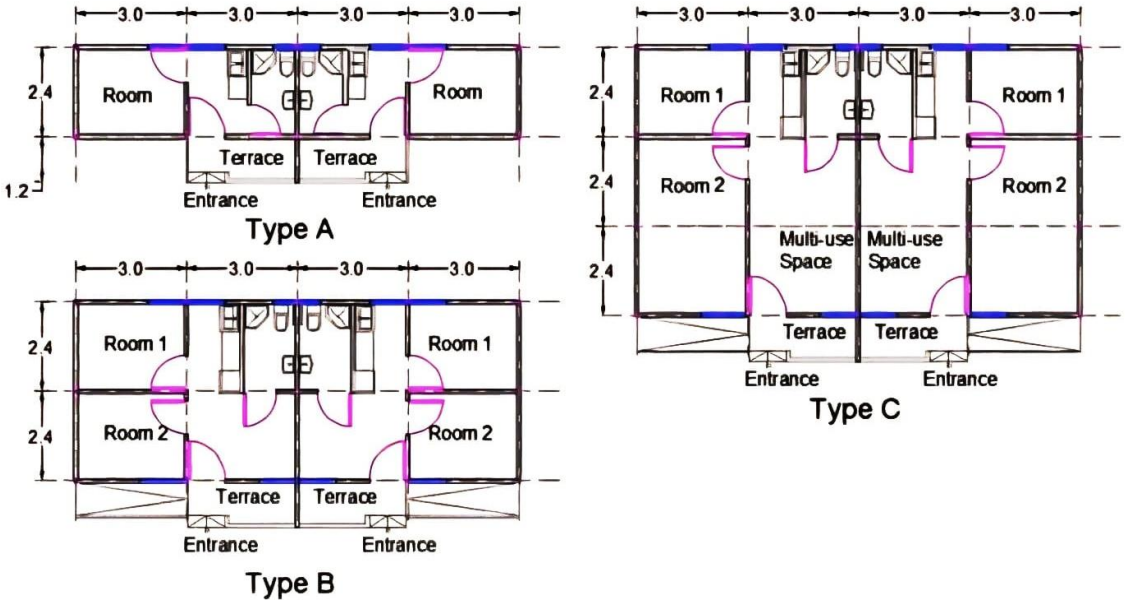
Doğal havalandırmanın insan konforu açısından çok önemli ve mutlaka sağlanması gereken bir kriter olduğu iklim bölgelerinde, geçici barınma üniteleri için yapılan iyileştirmeler bazı aktif uygulamaları da beraberinde getirmiştir. Tan & Tan (2021) tarafından, Tayvan'ın tropikal ikliminde yaz koşullarını dikkate alarak geçici barınma üniteleri için gerçekleştirilen, deneysel ve sayısal aşamaları olan bir çalışmaya göre kapı ve pencereyi kapalı tutarak ortalama hızı 2,75 m/sn olan mekanik bir fan eklemenin kullanıcı açısından en iyi sonucu sağladığı vurgulanmıştır. Li ve diğerleri (2024) acil barınaklarda sürdürülebilir ve enerji dayanımlı bir tasarım önerisi oluşturmak üzere bir çalışma yapmışlardır. Çalışmalarında Çin'de afetten etkilenen bireylerle görüşerek gerekli saha çalışmaları yapılmış ve afetten etkilenen nüfusun ihtiyaçlarını belirlemek amacıyla konuyla ilgili küresel pazar incelenmiştir. Elde ettikleri veriler sonucunda inşa ettikleri prototip; pasif enerji sistemli, güneş enerjisiyle çalışan ve yeniden kullanıma uygun sürdürülebilir bir acil barınma modeli oluşturmuştur.

LIFEBOX ile Aktif sistemleri kullanarak yeni bir tasarım önerisi geliştirilmiş ve aynı zamanda yaz ve kış dönemlerinde farklı iklim şartları için çözümler üretilmiştir. Ünitenin üst kısmında bulunan branda, yağışlı havalarda çatı görevi görmektedir. Kurulum şeması Görsel 11'de verilen birimin dar kısmındaki yan panel uygun koşullarda açılarak, teras gibi kullanılabilmektedir. Yeterli gün ışığından faydalanabilmek için tavanda ve yan panellerde cam düşünülmüştür. Barınma ünitesinin güneş enerjisinden faydalanarak kendi enerjisini üretmesinin sağlanması açısından tavan güneş pilleri yerleştirilmektedir. Atık ve temiz su depolarını da bünyesinde barındırmaktadır. Ayrıca ayarlanabilir ayak sayesinde, zemin problemi de kalmamaktadır (Uzut, 2016).

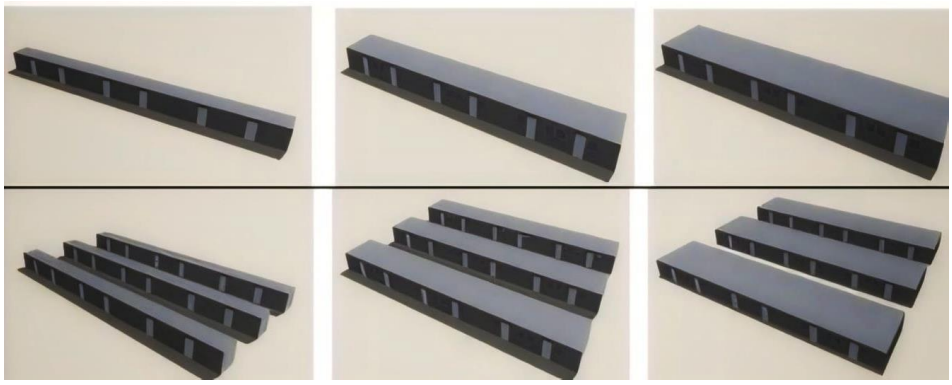


Görsel 11. LIFEBOX Tasarım Şeması

Asfour (2019) tarafından, Gazze şeridinde yerinden edilmiş insanların barınma koşulları incelenerek yapılmış olan çalışmada, barınaklarda kalan insanların ısıl konforunu sağlamanın güvenliklerini sağlamaktan zor olduğu belirtilmiştir. Gazze'nin sıcak iklim koşulları dikkate alındığında iyi tasarlanmış bir yalıtımın varlığının zorunluluğu ifade edilmektedir. Bu nedenle yapılan tasarımsal çözümlemede güneş emiliminin azaltılması, duvarlarda ve çatılarda ısı yalıtımı kullanılması hedeflenmiştir. Çalışma konusunu daha sonradan geçici barınma ünitesi olarak kullanılan nakliye konteynerleri oluşturmuştur. Geçici barınma ünitelerine çevrilen bu konteynerlerde herhangi bir ısı yalıtımının bulunmamasının, bu ünitelerde barınan insanlar için konfor şartlarının sağlık açısından tehlikeli boyutlara ulaşmasına sebep olduğu belirtilmiştir. Bu durumun giderilmesi adına yapılan bir dizi çalışmada söz konusu konteynerlerde tasarımsal çözümlemelere gidilmiştir. Bina kabuğunda ısı yalıtımının sağlanması adına hem çatıya hem de duvarlara polistiren levha uygulanmıştır. Isı yalıtımı uygulanan duvarlara aynı zamanda içten alçıpan eklenmiştir. Bu uygulama, çatının ve duvarların U değerini 5,9'dan 0,7 W/m^2K'ye düşürmüş ve sonuçlar uygulanan ısı yalıtımının yaz döneminde sıcaklığı etkili bir şekilde azalttığını göstermiştir (Asfour, 2019). Aynı zamanda termal duyumun barınakların açıkta kalan yüzeyleriyle doğru orantılı bir şekilde değiştiği saptanmıştır. Bu durumun giderilmesi adına Görsel 12'de farklı plan yerleşim şekillerinin gösterildiği üniteler, sıralar halinde gruplanmıştır. Görsel 13'de gruplama konfigürasyonları verilen barınaklarda bu sayede bazı duvarların güneş ışınımından korunduğu belirtilmiştir. Sonuç olarak çalışma içinde yapılan denemelerle termal konfor koşullarının kayda değer şekilde iyileştiği belirtilmiştir.



Görsel 12. Farklı plan ve yerleşim tipleri denenen geçici barınma birimleri



Görsel 13. Önerilen birimlerin incelenen gruplama konfigürasyonları

SONUÇ

Afet sonrası süreçte hayatta kalan insanlar için en büyük problem barınmanın sağlanmasıdır. Bunun için iyileştirme sürecinde devreye giren barınma birimleri afetzedelerin temel ihtiyaçlarına tam olarak yanıt verememektedir. Afetlerin ve savaşların neden olduğu yıkıcı etkilerin sürekliliği nedeniyle geçici barınma ünitelerine duyulan ihtiyaç daimî hale gelmiştir. Bu nedenle barınma birimlerinde yapılacak iyileştirmeler yalnızca dönemsel bir süreci kapsamayacak, ileriki dönemler için de bir hazırlık niteliği kazanmış olacaktır.

Geçici barınma üniteleriyle ilgili standartları vurgulayan, önemini ve yapılması gerekenleri açıklayan pek çok yönerge bulunmasına karşın bu ölçütlerin sahada tam anlamıyla uygulanması her zaman mümkün olmamaktadır. Bu durum afet sonrası hayatta kalmayı başarmış insanlar için bu süreci daha da zor hale getirmektedir. Geçici barınma ünitelerinde ihmal edilen konuların en önemlilerinden biri iklimsel parametrelerin geçici barınma ünitesi tasarımında ve yerleşim planlanmasında dikkate alınmamasıdır. Bu da barınma probleminin yanında yaz sıcağı ve kış soğuğu gibi mevsimsel etkilere karşı kısıtlı imkanlarla mücadele zorunluluğunu beraberinde getirmektedir.

Bu çalışmada GBÜ'lerde termal konforu iyileştirmek için yapılan çalışmalar 4 farklı başlık altında ele alınmıştır. Buna göre kullanılan kabuk malzemeler ve onların termofiziksel özelliklerinin, bulunulan iklim bölgesi dikkate alınarak seçilmesinin termal konfor üzerinde iyileştirici bir etkisi olduğu vurgulanmıştır (Yu vd., 2016). Yine kabuk malzemede, FDM gibi yardımcı bir malzemenin kullanılmasının termal konforu

iyileştirmek üzere olumlu katkılar sunduğu çıkarılan sonuçlar arasındadır. Çalışmalarda genel olarak var olan bir GBÜ'nün termal konforunun iyileştirilmesi üzerinde yoğunlaşıldığı (Tuladhar vd., 2019), ancak sonradan yapılacak eklemeler veya iyileştirmelerin getirdiği maliyet yükünün göz önünde bulundurulmasıyla, GBÜ'lerde iklimsel özellikleri de dikkate alarak gerçekleştirilen tasarım çalışmalarının ön plana çıktığı görülmektedir (Eltawell vd., 2023; Uzut, 2016; Asfour, 2019).

Sonuç olarak geçici barınma ünitelerinde termal konforun sonradan yapılacak eklemeler veya düzenlemelerle sağlanması ekonomik olarak oldukça güç görünmektedir. Bu noktada en ekonomik ve sürdürülebilir yaklaşım, mevcutta kullanılan geçici barınma ünitelerinin tasarım ve yapı kabuğu anlamında iklim bölgelerini de dikkate alarak güncellenmesi şeklinde olacaktır.

Authors' Contributions

The authors contributed equally to the study.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

This study does not require ethics committee approval.

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Research Article

Television and architecture: The impact of TV programs on profession choosing

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Abstract
Television, as a form of mass media, has an indispensable place and an active role in the daily lives of individuals. Among culture-art programs, those focusing on topics such as discussions, design, practical applications and real estate within the discipline of architecture provide educational opportunities for people to learn more about the field. In this context, a study was conducted with students of the architecture department and interior architecture department, who interacted more than normal with mass media, especially television and the internet, during the pandemic process. The study aims to determine whether the architectural programs on television are effective in influencing the career choices of students. In the study, semi-structured survey technique of quantitative research methods was used. First-year students from architecture and interior architecture undergraduate programs participated in the survey. Less than half of the 367 students who participated in the survey responded positively to whether television programs helped them with their career decisions. The majority of students who stated that they had an impact said that they had a moderate or above-average impact. This result can be seen at a low level. However, among the many socio-cultural, environmental, and economic factors affecting career choice, the fact that television programs are also a factor at this level makes it an important parameter.

Keywords: Television, Interior architecture, Architecture, Architecture TV programs, Choice of profession

Extended Abstract

Introduction: The fact that television is the most widely used tool among the mass media plays a great role in obtaining information about professions by observation. The diversity of the programs broadcast on television shows that a wide group of professionals are included. The broad field of architecture embodies the design of buildings, environments, and building stock, with various disciplines including architecture, industrial design, interior design, landscape architecture, and engineering. To define it in a broad perspective, "architecture," where concrete and abstract phenomena coexist, has site of special scientific interest in terms of orientation to society and people and is based on technique and engineering in terms of structure and equipment. It is realized as the result of a very special and complex synthesis aimed at artistic activity in terms of form, mass, and space phenomena (Erbil, 2009: 59; İzgi, 1999). Considering the educational role of television, a study was conducted on the effect of broadcasted programs on the choice of architecture and interior design professions. The lack of a detailed and comprehensive study on why the profession of architecture was chosen has led to this research. In addition, the rapid increase in the use of mass media in daily life, especially after the COVID-19 pandemic process, has created the idea that these tools have become one of the factors in individuals' better knowledge of professions and career preferences. In this context, a survey was conducted with students who had undergone the COVID-19 pandemic during the university entrance exam and preferred architecture and interior architecture departments, and the effect of television on their career choices was revealed.

Purpose and scope: The investigation's goal is to determine the effect of television programs on the choice of profession for architecture and interior architecture students in Turkey. A questionnaire with 17 semi-structured questions that students can electronically respond to was created with this goal in mind. The survey questions consist of the following: demographic characteristics (gender, age, university, department), frequency of watching television, types of programs watched on television or the internet (series, news, sport, documentary, entertainment, art and culture, reality show) and

what architectural programs are and the frequency of viewing. The duration of usage of devices such as mobile phones and computers, which may be used to watch television over the Internet, is also included in the study to prevent data loss since the study's focus is on architectural television shows.

Method: In the study, semi-structured survey technique, which is the primary data source of quantitative research methods, was used. The questionnaire form was created in Google Form, and students accessed it via a link. Ethics Committee permission for the survey study was obtained by the researcher from the institution where she worked. Some parameters were taken into account while determining the boundaries of the study sample. The first of these is to target students who were high school students during the COVID-19 pandemic and started to study in architecture/interior architecture departments by choosing a university in the same year. The reason for this is that students have to use technological devices such as television, computers, and mobile phones more than usual during the COVID-19 period. Therefore, the fact that students are always at home, even when they are at online courses, increases the probability of encountering television programs on architecture. This is due to the fact that students must use technology-such as television, laptops, and mobile phones-more frequently than usual during the COVID-19 period. Therefore, the fact that students are always at home, including during their education process, increases the probability of encountering television programs on architecture.

Findings and conclusion: 35.1% of the students (129 students) stated that television programs for their departments were directly or indirectly effective in choosing a profession in the survey study. This result can be seen as modest when viewed as a percentile. However, the fact that television programs are a factor at this level among many socio-cultural, environmental and economic factors that affect the choice of profession makes it an important parameter. The television programs that students prefer to watch and that they say are effective in choosing a profession also vary in this direction. The program "Home Awesome", in which a local architect changes a room in a selected houses interior design, has the highest viewing rate. This is followed by the "Threshold" and "Mim" programs, which deal with the structures and thoughts of Turkish architects. However, the majority of the students prefer to watch TLC and BEIN H&E television channels with foreign programs, not these programs. Among the foreign programs, "Flip or Flop" and "Fixer Upper", which include the applications of houses through both architectural and interior design, and "Love It or List It", which includes the architectural and interior design of the houses as well as their worth as real estates, are two of the most watched programs. The fact that these programs are on the TLC channel and that it is the television channel that students prefer to watch shows that foreign-based television programs have a greater effect on students' choice of profession. In addition, to the question that students are expected to write a television program, some responded by writing the name of the television channel or digital television platform (TLC: 55 students; Netflix: 11 students; DMAX: 6 students; TRT Documentary: 7 students), and some by writing an Instagram page. The fact that they write the name of a television channel instead of a television program shows that these channels are coded with programs from the field of architecture in the minds of the students. On the other hand, the TV/radio melodrama series "Sen Çal Kapımı (You Knock on My Door)" and "Her Yerde Sen (You Are Everywhere)" are among the answers that affect career choices. The fact that the professions of the leading actors in this series are architecture and landscape architecture is an indication that the series can be a source for obtaining information about professions.

Keywords: Television, Interior architecture, Architecture, Architecture TV programs, Choice of profession

INTRODUCTION

Mass media has an active role in a large part of society's daily life. A new age in communication, knowledge exchange, and acquisition began at the turn of the millennium. The expansion of mass media brought on by globalization and technological advancements has accelerated the ease of information access. Television and mobile phones are two examples of mass media that are widely used in society. The human experience has grown usually dependent on television. Another sign of the multifunctionality of mass media is the widespread usage of mobile devices and the ability to watch television on them.

With the spread of television, program contents have diversified, causing them to take on an informative role in every field. In this sense, they contribute to increasing public awareness of professions. The widespread use of television has made it one of the factors affecting career choices. Television is a medium that young people and adults are exposed to throughout their lives, and this can shape their interests and career goals. However, the effect of television on career choice may vary from person to person, and other factors (family, education, environment, etc.) also play a role. In any case, it should be remembered that television is only one factor in choosing a career and other factors should also be taken into account.

The study aims to determine whether the architectural programs on television are effective in influencing the career choices of students. The lack of a more detailed and comprehensive study on why the profession of architecture was chosen has led to this research. In addition, the rapid increase in the use of mass media in daily life, especially after the COVID-19 pandemic process, has created the idea that these tools have become one of the factors in individuals' better knowledge of professions and career preferences. In this context, a survey was conducted with students who had undergone the COVID-19 pandemic during the university entrance exam and preferred architecture and interior architecture departments, and the effect of television on their career choices was revealed.

Television as a Mass Media

Television, a French word, means "distant view" or "far-seeing." It is a combination of the Greek word "tele" and the Latin word "visio" meaning "to see". Generally speaking, it is a recording and transmission device that makes it possible for objects to be electrically visible in both natural and artificial settings and times (Cereci, 1996: 22; Temel Britannica, 1993: 135; Uyguç & Genç, 1998: 43). In addition to newspapers, radio stations, publishing houses, magazines, and media firms, television stations are part of the press and media industry (Li et al., 2023: 506). Television is taking people to all environments and times at the same time with great speed. As George Gerbner and Larry Gross (1976) stated, television, the most widely used mass media, has permeated almost every home from the cradle to the grave (Gerbner & Gross, 1976: 175). Television is an information and entertainment medium that traditionally occupies the largest share of domestic leisure time (Zillmann, 2000: 2). Watching television has always been a social activity. Both at the time of watching and after the fact, television serves a number of social purposes, such as providing topics for conversations, easing interaction, and promoting feelings of togetherness. People watch television together in their living rooms and outside their homes; they talk about last night's football match and even call each other to recommend an interesting program (Cesar et al., 2008: 1; Harboe et al., 2007: 116; Saxbe et al., 2011: 181).

Mass media, especially television, also produce and spread popular cultural items (Lule, 2012). Considering that television has followers as an element that affects people's culture (such as literature and art), it can be characterized as a cultural production and consumption tool (van Rees & van Eijck, 2003: 465). Television is a central storytelling system and an integral part of everyday life. Dramas, commercials, news, and other programs carry a relatively coherent world of common images and messages into every home. Programs prepared in various formats, such as television messages, news, entertainment, and drama, aim to influence the thoughts, attitudes, beliefs, values, and behaviors of individuals (Gerbner et al., 1986: 18).

Television is the most effective of the mass media. This is because it appeals to both the eye and the ear (Marriott, 1996: 69). As Baudrillard (1994) said, television is now a world watching you/your life. Many television channels have begun to broadcast since the millennium. The increasing number of channels has attracted the attention of many segments in terms of preparing publications for the interests and needs of people from all walks of life. As a result, society's interest has grown in television (İsmailoğlu, 2022: 8). Diverse television programs are grouped in various ways in many countries. It is classified according to the structure determined by TRT (Turkish Radio and Television Corporation) in Turkey. These are news programs, current programs, educational programs, cultural programs, drama programs, real-life programs, children's programs, entertainment programs, commercial communication and promotion, and other programs. Each program usually has a separate airing time and day from the others.

Prime Time, the time television is watched most frequently, is from 20:00 to 23:00 in Turkey. Soap operas, reality shows, and cultural programs are frequently broadcast on Turkish television during prime time. There are numerous programs on television with various contents under the title of cultural programs. This includes television shows in the subjects of design and architecture. Turkish television shows related to architecture come from both domestic and foreign sources. In this sector, television programs are produced using project implementations, purchases, or interviews as content. It is possible to come across many studies on television programs broadcast in Turkey. Due to the increase in the use of social media, studies carried out on the mass media for the discipline of architecture have recently attracted attention (Izadpanah & Gunce, 2021: 549). But, when the literature is examined, there is a study on the grouping of television programs only for the discipline of architecture, in the country or abroad (İsmailoğlu, 2022: 9). Additionally, research was carried out for

students of all ages with the idea that television programs have an instructional and guiding component (Baydar et al, 2008; Dimaki et al., 2005; Hoffner et al., 2006; King & Multon, 1996; Karaca & Yalçınkaya, 2019; Mares & Pan, 2013; Borzekowski, 2018; Wartella et al., 2018; Borzekowski et al., 2019).

The Effect of Television on Career Choice

It has been determined that television is a major aspect in deciding on a profession as a result of studies on how it affects people (Atli & Gür, 2019; Özyürek & Atıcı Kılıç, 2002). The diversity of independent television shows increases the potential to appeal to different occupational groups in terms of content. An occupation is a set of activities based on knowledge and skills acquired through specific education and determined by society, the rules that individuals must follow in order to earn a living (Kuzgun, 1986: 217; Yanıkkerem et al., 2008: 61). Occupations are a phenomenon that resulted from people's social consciousness, both as a necessity of coexisting and as a result of their division of labor and specialization (Köksalan & Celkan, 2018).

Occupational groups began to form with the increase in the division of labor and specialization. The increase in occupational groups has increased the importance of choosing a profession. The choice of profession has a very important place in the life of an individual. Occupation is a continuous occupation, not a one-time action performed by the individual in his life. One-third of human life is spent in professional activities. The chosen profession affects many aspects of the individual's life. Occupational choices affect many aspects of an individual's life, such as whom to marry, working style, daily lifestyle, and worldview (Brown, 2003: 18; Eryetiş, 2016; Hepkul, 2016; Kuzgun, 1986: 217; Nalbantoğlu Yılmaz, 2017: 225).

The profession is, first of all, a means of using one's talents, self-realization and development. While the individual does not feel tired while doing a job, they love, the probability of getting an occupational disease is reduced because they are not stressed. Therefore, the profession should not be seen only as a means of earning money. People who work in occupations that are right for them do so willingly; by advancing in their field, they are leading a happy life (Kars et al., 2014: 188; Sarıkaya & Khorshid, 2009: 394). Many factors play a role in the selection of a profession which affects human life in different aspects. The important thing in choosing a profession is that individuals make a choice in line with their personalities, abilities, and interests (Kuzgun, 1986: 43; Savickas, 2005: 42; Splaver, 1977: 13). After completing the compulsory education period, the individual either continues to higher education or enters the business world. The student who completes a certain education and training process chooses his profession and job. However, students often face the problem of choosing a profession as a result of their educational experience (Deniz, 2001: 3). Many studies have been conducted on the career choices of university students (Alkan, 2014; Çiftçi et al., 2011; Dinç, 2008; Genç et al., 2007; Özyürek & Atıcı, 2002; Pekkaya & Çolak, 2013; Sarıkaya & Khorshid, 2009; Şirin et al., 2008).

In order for a person to choose the most suitable profession for himself, he must first know himself and have a very good knowledge of the professions (Kuzgun, 2000: 42-43). Occupational choices are the result of a series of decisions influenced by individual preferences, aspirations, and social factors (Dimaki et al., 2005: 432). In addition, being successful in one's profession is related to choosing the profession knowingly and willingly and being physically, spiritually, and mentally ready for it (Mooney et al., 2008: 386). Choosing a career is an extremely complex process. For this reason, it is difficult to determine the factors that are effective in the process, to explain the relations between the factors and to determine the ones that will positively affect the outputs or the effect of each factor on the output (Germenijs & Verschueren, 2007: 224; Esbroeck et al., 2005: 8-9).

Factors affecting career choice and development are grouped as social and psychological. Harnquist (1978) and Blau (1956) also underlined the importance of psychological and social factors in the professional process. While the most important of these factors is seen as talent (Kuzgun, 2000: 21; Yeşilyaprak, 2012: 45), there are studies that show interest in the profession (Yılmaz, 2011), gender (Zysberg & Berry, 2005; Mau & Lynn, 2001), and choice of profession. Studies on the career preferences of high school and university students have revealed that many factors such as gender, educational background, personal preference (Karlsen, 2001), socioeconomic background (Kefal et al., 1992), family history and the father's occupation (Sjögren, 2000), the social environment, and oneself (Super, 1957) are effective.

While there are many factors in choosing a profession, the fact that individuals have the opportunity to see or experience different professions also affects their decision-making processes. What is known theoretically about the professions of individuals who make up the social environment can be better perceived by seeing or experiencing it. In cases where there is no opportunity to learn this way, mass media can obtain information. Today, especially in industrialized societies, the possibility for individuals to know professions by seeing and experiencing them is very limited (Eryetiş, 2016). In this context, information about professions is obtained by using mass media, which has become widespread with the effect of globalization. Learning experiences may be vicarious, which means that observers can learn behaviors, values, attitudes, and skills through simple observation of television, media, and books in addition to observing others (Bandura, 1977).

The fact that television is the most widely used medium among the various forms of mass media plays a great role in obtaining information about professions by observation. The diversity of the programs broadcast on television shows that they include a wide professional group. Considering the educational role of television, a study was conducted on the effect of broadcasted programs on the choice of architecture and interior design professions. The broad field of architecture is the design of buildings, environments, and building stock, with various disciplines including architecture, industrial design, interior design, landscape architecture, and engineering. To define it in a broad perspective, "architecture," where concrete and abstract phenomena coexist, has scientific weight in terms of orientation to society and people and is based on technique and engineering in terms of structure and equipment. It is realized as the result of a very special and complex synthesis aimed at artistic activity in terms of form, mass, and space phenomena (Erbil, 2009: 59; İzgi, 1999: 10).

According to Lawson (2005), designers in the fields of architecture, interior architecture, industrial design, city planning, and regional planning need to produce beautiful, durable, and functional products for mass and environmental spaces. All of these areas are concerned with the creation of objects or places designed to be used for practical purposes and viewed for artistic purposes. Most of the time, performing designs in these areas necessitates a high level of technical knowledge and experience, as well as visual creativity and design skills. According to a study conducted by İlerisoy and Aycı (2019) with 69 students on why architecture students choose this profession, 59.4% of architecture students have an interest and information response. The lack of a more detailed and comprehensive study on why the profession of architecture was chosen has led to this research. In addition, the rapid increase in the use of mass media in daily life, especially after the COVID-19 pandemic process, has created the idea that these tools have become one of the factors in individuals' better knowledge of professions and career preferences. In this context, a survey was conducted with students who had undergone the COVID-19 pandemic during the university entrance exam and preferred architecture and interior architecture departments, and the effect of television on their career choices was revealed.

METHOD

The investigation aims to determine the effect of television programs on the choice of profession for architecture and interior architecture students in Turkey. Semi-structured survey technique, one of the quantitative research methods, was used. A questionnaire with 17 semi-structured questions that students can electronically respond to was created with this goal in mind. The survey questions consist of the following: demographic characteristics (gender, age, university, department), frequency of watching television, types of programs watched on television or the internet (series, news, sport, documentary, entertainment, art and culture, reality show) and what architectural programs are and the frequency of viewing. The duration of usage of devices such as mobile phones and computers, which may be used to watch television over the Internet, is also included in the study to prevent data loss since the study's focus is on architectural television shows.

The questionnaire form was created in Google Form, and students accessed it via a link. Ethics Committee permission for the survey study was obtained by the researcher from the institution where she worked. Some parameters were taken into account while determining the boundaries of the study sample. The first of these is to target students who were high school students during the COVID-19 pandemic and started to study in architecture/interior architecture departments by choosing a university in the same year. The reason for this is that students have to use technological devices such as television, computers, and mobile phones more than

usual during the COVID-19 period. Therefore, the fact that students are always at home, even when they are at online courses, increases the probability of encountering television programs on architecture. This is due to the fact that students must use technology-such as television, laptops, and mobile phones-more frequently than usual during the COVID-19 period. Therefore, the fact that students are always at home, including during their education process, increases the probability of encountering television programs on architecture (Figure 1).

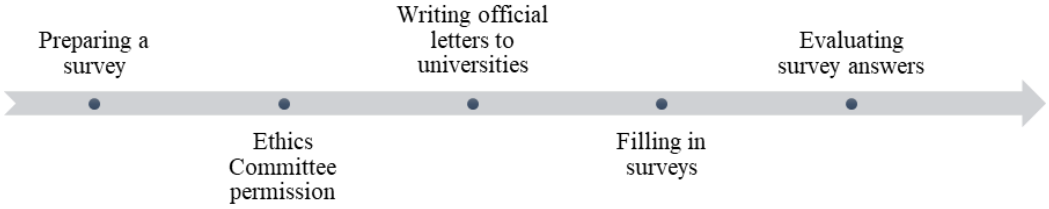

Figure 1. Steps of the study

In this context, a total of 7957 first-year students enrolled in the Architecture Department and Interior Architecture Department of universities in 2021 constituted the sample universe. The sample size was determined to be 367 students with a 95% reliability and a 5% margin of error. In order to enable students to access the survey, the universities with the Department of Architecture and Interior Architecture were asked to share the survey link with the students by giving information about the research. When the desired number of students in the survey was reached, the survey link was closed. The data were analyzed in the SPSS 29.0 statistical package program on the computer. Descriptive analyses (number, percentage, mean) were used in the analysis of the data. Frequency and chi-square tests were used in the study. First of all, the frequency and percentages of response groups were included in the study. Since the data used in the comparison of the groups are classified data, the chi-square test was applied. In this study, the error level was taken as 0.05.

FINDINGS AND RESULTS

First of all, the demographic characteristics of 367 students who participated in the survey were examined. Demographic information consists of gender, age, university, and department information at the university. 64.8% of the students participating in the research were female, and 35.2% were male. The ages of the students were discussed in three groups: under 20 years old, between 21-29 years old, and over 30 years old. 66.2% of the students participating in the survey are under the age of 20. 33.2% of the students participating in the survey are studying at Atatürk University, 24.5% at Dicle University, and 16.3% at Akdeniz University. In addition, more than half of the students (69.2%) are students of architecture (Table 1).

Table 1. Demographic characteristics of students

Parameters		**Frequency**	%	**Parameters**		**Frequency**	**%**
Gender	Female	238	64,8	**University**	Akdeniz University	60	16,3
					Atatürk University	122	33,2
					Dicle University	90	24,5
					Hacettepe University	18	4,9
					Istanbul Technical University	4	1
	Male	129	35,2		Karadeniz Technical University	29	7,9
					Ondokuz Mayıs University	39	10,6
					Samsun University	5	1,6
Age	17-20	243	66,2	**Department**	Interior Architecture	113	30,8
	21-29	109	29,7				
	30-40	15	4,1		Architecture	254	69,2

The students who participated in the survey were asked to give one or more answers to the question of which program or programs they prefer to watch on television. Almost half of the students stated that they watched art/culture programs (175 students) and TV series (171 students). When asked how much of their daily time they spend watching television, almost all of the students (347 students) watch television for 1-3 hours daily.

In addition, more than half of the students (240 students) stated that they spend 1-3 hours on the internet (except for Instagram, Facebook, TikTok, WhatsApp, etc.) (Table 2).

Table 2. The programs they watch, the frequency of watching television, the time they spend on the internet excluding applications

Parameters		Frequency	%	Parameters		Frequency	%
Tv Programs	Series	171	46,5	**The frequency of watching television**	1-3 hours	347	94,5
	News	68	18,5		3-5 hours	19	5,2
	Sport	114	31		5-7 hours	1	0,3
	Documentary	151	41,1		More than 8 hours	-	-
	Entertainment	148	40,3	**Time spent on the internet excluding apps**	1-3 hours	240	65,4
	Art and culture	175	47,6		3-5 hours	83	22,6
	Reality show	111	30,2		5-7 hours	33	9
	Total	367	100		More than 8 hours	11	3

When the students were asked whether they followed the television programs related to their departments on television / on the Internet, 60% (220 students) said that they followed it; 33.5% (123 students) stated that they partially followed it. To the question of the frequency of following these programs; 26.2% (96 students) answered once in 2-3 months, 19.3% (71 students) answered 1 per week and 17.4% (64 students) answered once a month. When the students were asked about the television channels they follow for these programs, 72.2% (265 students) answered TLC and 21.5% (79 students) answered BEIN H&E (Table 3).

Table 3. Channels followed and frequency of watching television programs in the field of interior architecture/architecture by students

Parameters		Frequency	%	Parameters		Frequency	%
Frequency of following programs	Once in 2-3 months	96	26,2	**Television channels**	Kanal D	49	13,4
	Once a month	64	17,4		Star TV	28	7,6
	2-3 times a month	58	15,8		TRT 2	67	18,2
	1 per week	71	19,3		TLC	265	72,2
	2-3 per week	58	15,8		Bloomberg HT	53	14,4
	Everyday	20	5,5		Bein H&E	79	21,5

To the question of whether television programs are effective in choosing a profession, 35.1% (129 students) of the students who participated in the survey answered that they are. When the students who stated that they were effective were asked to what extent they had an impact, 59% (76 students) stated that they had a medium level of impact, and 18.6% (24 students) stated that they had more than a medium level of impact (Table 4).

Table 4. Do the programs on television have an effect on the choice of profession? If yes, what is the rate? responses to questions

Parameters		Frequency	%	Parameters		Frequency	%
The impact of television programs	Yes	32	8,7	**How effective are TV programs?**	1	9	6,9
					2	20	15,5
	Partially	97	26,4		3	76	59
					4	18	14
	No	238	64,9		5	6	4,6
					Yes or Partially	129	35,1

The students, who stated that television programs were effective in choosing a profession, answered “Flip or Flop” with 15.4%, “Home Awesome” with 12.6%, and “Love It or List It” with 12%. In addition, all of the students who participated in the survey were asked which television programs they preferred to watch for their departments. Students answered “Flip or Flop” with 13.3%, “Home Awesome” with 12.5%, “Fixer Upper” with 12.1%, and “Love It or List It” with 10.9%. Some of the students gave the answer for the television channel instead of the television program. These answers are included in the discussion section to be evaluated (Table 5).

Table 5. Answers to the questions about the television programs that affect the choice of profession and the television programs about the architecture they prefer to watch

Parameters	Programs	Frequency	%	Parameters	Programs	Frequency	%
Television programs that affect the choice of profession	Home Awesome	9	12,5	**Television programs for the architecture you prefer to watch**	Home Awesome	32	12,5
	Let Me Do It	1	1,4		Threshold	5	2
	Threshold	2	2,8		Mim	6	2,4
	Mim	2	2,8		Awesome Homes	1	0,4
	Architecture Interviews with Aykut Köksal	2	2,8		Architecture Interviews with Aykut Köksal	9	3,5
	Awesome Homes	1	1,4		Flip or Flop	34	13,3
	Flip or Flop	11	15,2		Christina on the Coast	4	1,6
	Christina on the Coast	3	4,1		House Hunters	7	2,7
	House Hunters	4	5,5		Fixer to Fabuous	1	0,4
	My Home Is Better	1	1,4		Love It or List It	28	10,9
	Love It or List It	8	11		Beach Hunters	2	0,8
	Beach Hunters	1	1,4		Stone House Revival	4	1,6
	Stone House Revival	2	2,8		Stay Here	2	0,8
	Stay Here	1	1,4		Good Bones	8	3,1
	Good Bones	3	4,1		Fixer Upper	31	12,1
	Fixer Upper	7	10		Property Brothers	14	5,5
	Property Brothers	3	4,1		One of A Kind	1	0,4
	Flipping 101	1	1,4		Bargain Mansions	5	2
	Bargain Mansions	1	1,4		Grand Designs	7	2,7
	Mega Structures	1	1,4		Treehouse Masters	5	2
	Tough Love with Hilary	1	1,4		Tiny House Hunter	13	5,1
	Tiny House Hunter	4	5,5		Amazing Interiors	8	3,1
	The Art of Design	2	2,8		Extreme Engineering	3	1,2
	Craft Wars	1	1,4		Building Alaska	1	0,4
	Total	72	100		Cabins in The Wild	2	0,8
					Windy City Rehab	3	1,2
					Abstract: The Art of Design	2	0,8
					Mediterranean Life	3	1,2
					The World's Most Extraordinary Homes	12	4,7
					Interior Design Masters	5	2
					Total	258	100

After the frequency analysis of the answers, the chi-square test was conducted to determine whether there is a significant relationship between the demographic characteristics of television channels and programs and the frequency of watching. As a result of the test, it was seen that there was no significant relationship between the genders, age groups and departments of the students and the television channels, programs and watching frequencies related to their departments. Since the number of students participating in the survey was not close to each other, no comparison could be made between universities.

CONCLUSION

Choosing a profession is one of the most important decisions in a person's life. Occupation has a decisive role in creating the individual's social status and identity. For this reason, it is important as a factor that shapes the individual's identity and determines his social and financial status. It is known that there are a number of factors that affect the choice of profession. This study is based on the hypothesis that television, one of the mass media, which reflects the professional life that constitutes a large part of daily life, is effective in people's choice of profession. In this direction, a questionnaire was applied to first-year undergraduate students in architecture and interior architecture. Among the television programs that vary in content, those with cultural and artistic content, whether of domestic or foreign origin, have increasingly taken place in television channels in Turkey since the turn of the millennium. Among these programs, the ones that attract attention and are in demand by society are those in architecture/real estate and the food and beverage sectors. High school senior

students who have experienced staying at home, social isolation and online education during COVID-19 have experienced a different preference period than students in their upper and lower terms. During this period, students were heavily exposed to mass media such as the telephone and television. In this context, it has aroused curiosity about whether the mass media have an effect on the choice of profession of the students who started university after COVID-19, who are in the departments of architecture and interior architecture.

As a result, in the survey study, 35.1% of the students (129 students) stated that television programs for their departments were directly or indirectly effective in choosing a profession. This result can be seen as modest when viewed as a percentile. However, the fact that television programs are a factor at this level among many socio-cultural, environmental and economic factors that affect the choice of profession makes it an important parameter. There are many alternatives to television channels of local and foreign origin. The television programs students prefer to watch and say are effective in choosing a profession also vary in this direction. The program "Home Awesome", in which an architect from the local program changes a room in a selected house's interior design, has the highest viewing rate. This is followed by the "Threshold" and "Mime" programs, which deal with the structures and thoughts of Turkish architects. However, most students prefer to watch TLC and BEIN H&E television channels with foreign programs, not these programs. Among the foreign programs, "Flip or Flop" and "Fixer Upper", which include the applications of houses through both architectural and interior design, and "Love It or List It", which includes the architectural and interior design of the houses as well as their worth as real estates, are two of the most watched programs. The fact that these programs are on the TLC channel and that it is the television channel that students prefer to watch shows that foreign-based television programs have a greater effect on students' choice of profession. In addition to the question that students are expected to write a television program, some responded by writing the name of the television channel or digital television platform (TLC: 55 students; Netflix: 11 students; DMAX: 6 students; TRT Documentary: 7 students), and some by writing an Instagram page. The fact that they write the name of a television channel instead of a television program shows that these channels are coded with programs from the field of architecture in the students' minds. On the other hand, the TV/radio melodrama series "Sen Çal Kapımı (You Knock on My Door)" and "Her Yerde Sen (You Are Everywhere)" are among the answers that affect career choices. The fact that the professions of the leading actors in this series are architecture and landscape architecture indicates that the series can be a source for obtaining information about professions.

Contrary to the news, soap operas, sports and daytime programs broadcast on television, culture and art programs that have an educational role and are utilized in real life provide more information about professions. In addition to obtaining information, television programs provide information on the process of professional life, although not in detail but superficially. In the programs in the field of architecture, it is shown how the professional life consists of fiction both in theory and in practice. Among these programs, "Threshold", "Mim" and "Architecture Interviews with Aykut Köksal", which are local programs, continue the program setup with more well-known architects regarding the theoretical side of architecture. In the television programs about the application part of the profession, the construction site process, the application of materials, the decisions made about the application, etc. are included, among many other events. In this context, besides the fact that local programs on television channels are present in a small number of theoretical programs, it is evident from the results of the study that they have contributions. The fact that almost all of the programs for vocational practice are of foreign origin and that they are popular among students shows that programs for comprehensive practice projects should be made locally. In this way, it will be possible to obtain information about the professional life and procedures in the country as well as the operations abroad. In addition, television programs can be included in both theoretical and project studio courses for undergraduate students and can be used as an educational resource for students who do not have the chance to practice or gain experience. It is thought that the contribution of television programs related to the choice of profession of students studying in the department of architecture and interior architecture in the literature will be a guide for both educators, television programmers, and content producers. Within the scope of future studies, studies on documentaries, interviews, movies, social media pages, digital platforms and channels related to the discipline of architecture can be conducted and research can be made on the effect of their content on informing both university students and high school students who will choose a profession. In addition, when programs for architectural disciplines other than architecture and interior architecture are broadcast on television, studies can be conducted for students from these fields.

Authors' Contributions
There is a single author in this paper who contributed 100%.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

Within the scope of the research, ethics committee approval was received from Recep Tayyip Erdoğan University Rectorate Social and Human Sciences Ethics Committee dated 24.05.2022 and numbered 2022/115.

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Research Article

Senses and movement-experience of streets

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Abstract
Movement-experience is a concept that encompasses the relationship, communication, and interaction between the sense, space, and time. This research aims to examine streets as a medium for experiential movement by analyzing sensory, activity, and physical space variables, conducted with a mixed method that combines quantitative and qualitative approaches. These variables include visual, auditory, and olfactory sensations, user activities like standing, sitting, and walking, and physical features such as pavement width, number of trees, number of barriers, and building height. To collect data, 48 walks were conducted on Mevlana Street at different times and days, resulting 768 time-space sections. The variables were recorded and analyzed using advanced data analysis techniques, and descriptive statistics were generated. The study then explored the relationships between time-activity, time-experience, space-activity, space-experience, and activity-experience using multi-factor variance analysis. Based on the findings, this study proposes innovative design and planning criteria for streets that incorporate a multisensory approach to enhance the experiential quality of urban environments.

Keywords: Activity, Experience, Movement, Senses, Street

Extended Abstract

Introduction: Life denotes the ongoing interaction and communication between humans, their surroundings, and the passage of time, occurring in both natural and human-made environments. As the individual engages in various activities such as walking, stopping, and drinking tea, they realize that everything in their environment is in motion, and time inexorably moves forward, shaping the continuity of life. The universe itself is dynamic and sentient. If the city is perceived in its instantaneous state as a photograph, it becomes clear that the elements within the frame are constantly changing. Within a mere second, these elements shift and evolve, mirroring life's dynamic nature. The familiar parts of the urban environment, including buildings, streets, avenues, and landscape elements, undergo a continuous transformation: deterioration, renewal, maintenance, vitality, and eventual decay, all influenced by time. One of the fundamental aspects contributing to the preservation of life is the interaction and communication exhibited through human spatial movement and the subsequent experience of spatial surroundings. The perception and interaction with the physical dimensions of space define human existence. The perception of spatial awareness arises due to the cerebral processing of sensory information acquired through the five sensory organs. Within this particular context, the perception of spatiality is shaped through the cognitive processing of sensory information acquired through visual, auditory, gustatory, tactile, and olfactory modalities. Simultaneously, humans are constantly in motion within the realm of space. Walking, running, sitting, and standing all indicate an individual's spatial position and physical capabilities.

Purpose and scope: This study aims to examine life in space, focusing on human interaction and communication within the context of space exploration. This interaction encompasses how individuals live, perceive, and experience space. The concept of movement experience plays a crucial role in defining this interaction. Additionally, this study seeks to propose a model and methodology for understanding movement experience. To achieve these objectives, the physical space on Mevlâna Street was conducted, human activities in that area were identified, and experiential criteria were established. With this framework, it was attempted to examine life on the streets.

Method: This study used a mixed-method approach to analyze street life. The methodology included data collection techniques such as documentation, recording, and experiential walks. The laser scanner was used to scan the street, generating a point cloud of the street. Plans, sections, and elevations of the street were created based on the point cloud data. Sixteen space sections of equal route length were delineated to account for changes in the street's form. The study areas were determined based on the fixed route length or variations in the street's shape. Parameters such as sidewalk width changes, tree count, obstacles, and building height changes were noted along with cross-sections and views. The researcher visited the street multiple times on specific dates between 8th August 2018 and 19th September 2018, specifically targeting weekdays and excluding rainy days. They also conducted observations during specific time periods: 10:00-10:20, 14:00-14:20, and 20:00-20:20, totaling 48 observations by walking along the predetermined route. The recordings were made using a "Goprohero Black 5" camera set at an eye level of 1.65 meters. A methodology was proposed based on examining variables by multiplying space-time sections in Mevlâna Street, which was selected as the study area. Additionally, variables related to odor experience were marked in space-time sections. The categorical variables of physical space, such as pavement type (fixed, variable, squared), tree count, obstacles, and building height (fixed, variable, squared) were evaluated categorically. Numeric evaluations included total people count and counts for standing, sitting, and walking individuals. Sound presence (nature, music, human, mechanical, transportation) and smell categories (nature, food, garbage, emission, synthetic, cleaning, industry) were also evaluated. Tactile experience was excluded due to the constant data. The data of 768 space-time sections with different variables were analyzed using the SPSS program. Initially, frequency tables were prepared, followed by obtaining statistical findings on time-activity relationships through multi-category ANOVA analysis.

Findings and conclusion: When analyzing the statistical findings regarding the time-activity relationship, it was observed that the street experiences its highest intensity of use at noon. However, there is a numerical decrease compared to the morning and noon hours. The number of walking users takes average values close to each other even if the sidewalk movement on the street differs. The number of standing users increases in fixed sidewalk movement. The number of seated users is higher where the buildings are set back, and the sidewalk becomes a square. Trees are essential urban elements for streets. The number of standing and sitting users is concentrated where there are more trees. When the relationship between sidewalk movement and spatial experience is examined, it is seen that the smell of nature is more common on squared sidewalks, and the sound of nature is more common on fixed sidewalks. On the other hand, the smell of garbage and the smell of cleanliness increase in space sections with variable sidewalks. The presence of natural sounds, such as those from nature or music, significantly influences street activity. For instance, spaces with natural sounds on Mevlana Street attract more seated users. Conversely, areas with music attract higher numbers of standing and walking users. The scent of nature also contributes to users stopping and sitting on the streets. Statistical analysis reveals that parts of the space lacking natural odors have higher numbers of walking users. Furthermore, the presence of food odor on Mevlana Street correlates significantly with standing users but less so with seated users.

Keywords: Activity, Experience, Movement, Senses, Street

INTRODUCTION

Streets are characterized by their dynamic nature and serve numerous functions beyond their primary function as transportation infrastructure. Thwaites et al. (2020: 296) argue that streets are crucial elements in shaping the character and identity of a city and have significant social, cultural, and economic values. Streets can be perceived as an extension of the indoor space, where the pedestrian acts as an active participant moving from the entrance to the center of the external room (Palipane, 2017: 55). According to Jacobs (1993: 49), the primary purpose of streets is to facilitate movement, and well-designed streets promote user engagement by incorporating diverse semantic and conceptual qualities. These qualities include rhythm, activity, illusion, mystery, charm, sociability, comfort, and safety. The value of a street is dependent on its ability to accommodate all these qualities and offer pedestrians a variety of experiences.

A well-designed and well-managed street can add to a city's economic and cultural vitality and general quality of life. Sociability, usage and activity, live ability for all, a sense of space, safety, comfort, traffic speed,

physical space, human scale, art, attraction, proximity, morphology, and permeability are all used to evaluate the streets as variables of urban space (Appleyard, 1980; Biddulph & Council, 2012; Bosselmann et al., 1999; Burton & Mitchel, 2006; Dumbaugh, 2005; Ewing & Clemente, 2013; Khoshkholghi, 2011; Momtaz & Elsemary, 2015; Tibbalds, 1992). While certain variables provide quantitative and measurable data, such as traffic speed or proximity, others explore the urban environment through the subjective experiences of its users.

The concept of movement experience establishes the relationship between street activities, the senses, and physical space. Movement is the visible manifestation of time (Lefebvre, 1974: 95). It can be managed and directed (Merleau-Ponty, 1996: 32). Mobility fictionalizes the relationship between the city and the body, fills the space, and is related to identity (Kwan, 2013: 94). In the book *Architecture and Movement the Dynamic Experience of Buildings and Landscapes* by Peter Blundell Jones and Mark Meagher (2015: 1), movement experience appears for the first time. It analyzes the relationship between architecture and movement through a collection of articles written by authors. The movement in the book corresponds to the time variable, walking, and actions in the space.

According to White (1999: 186), this experience includes belongingness and is associated with approach, participation, invitation, and leaving. The experience created by the movement is the continuation of memories, hopes, desires, feelings, preferences, choices, and activities. Lefebvre (1974: 231) determined three fundamental moments when he questioned the process of space production according to social relations. These moments are perceived space, conceived space, and lived space. Lefebvre utilized perceived space to denote spatial practice, conceived space to represent representations of space, and lived space to embody the experience of space. Similarly, following Lefebvre's ideas, Montgomery (1998: 98) constructed a model based on activity, form, and image to analyze urban environments. These three criteria converge to shape the urban landscape. As a component of the movement experience, the physical space (if the streets are considered urban rooms) consists of ground, pedestrian road, motor road, landscape, urban equipment, building facades, and sky. The character of the physical space shows itself through these elements' size, color, texture, number, and organization on the street.

Gehl and Svarre (2013: 2) considered street design as the structure of the pedestrian system, the design of buildings, spaces, or edges associated with the pedestrian system, and detailing the pedestrian environment. Organizing the pedestrian structure and movement is necessary to design the life between the buildings. It should also be designed for human behavior, such as walking, standing, and sitting. As a component of the movement experience, the space experience consists of senses (seeing, hearing, tasting, touching, and smelling), which provide data for human beings to build reality in their mind. When the users experience space effectively, they perceive its physical characteristics like form, color, volume, size, and design features such as beauty, balance, coordination, and hierarchy.

Furthermore, space experience includes the reality of seven sensory experiences (Pallasmaa, 2006: 28) that are interrelated and, at the same time, intermingled. However, it also consists of a complex phenomenology (Lentini & Decortis, 2010: 407) that covers geographical, sensory, and human criteria. To illustrate that, geometric, geographic, sensory, cultural, personal, and relational experiences constitute the space experience (Lentini & Decortis, 2010: 413). The relationship between experience and space is also evaluated in terms of distance between people (Gifford, 1983: 170), placemaking (Perdikogianni, 2007: 02), and socio-spatial understanding of urban street edges (Thwaites et al., 2020: 296). According to Cullen (1961: 7), the user experiences a single building as architecture, but an artistic experience is formed when the buildings come together. If the characteristics of the visual experience are examined, the sense organ is the eye, the data received is the light, the transfer type is the light, the activity of the sense organ is an open and closed eye, the activity of the environment is the perspective, the type of action is control, the depth of perception and its direction is linear perspective (Naghizade & Ostadi, 2014: 60).

Color, shape, volume, size, density, visual richness, visual coordination, imaginability, subjectivity, and consistency with nature are the characteristics of urban space that are perceived with the sense of vision (Naghizade & Ostadi, 2014: 60). The visual sense is affected by void, distance, light quality, color, shape, and tactile elements. According to Gehl (2010: 41), our sensory system moving from the horizontal is the key to space. However, different activities in the street (such as sitting, stopping, and eating) diversify the street

experience. Unlike visual experience, sound experience creates spaces with undefined limits. Furthermore, it is an unsettled experience that we cannot focus on (Porteous, 1996: 33). In addition, the sound experience includes the relationship between the emotional environment and the activity (Diaconu, 2011) and acoustic communication (Truax, 1984: 58). The sounds in the city, human voice, nature sound, music sound, transport sound, and mechanical sound can be examined through different classifications (Aiello et al., 2016: 1). Sound walks are one of the methods applied to examine the sound experience in urban space. Moreover, Radicchi (2017: 70) has created a guideline for performing sound walks by determining the criteria for location, duration, diversity of participants, route, assessment points, visual deprivation, and technical equipment. The smell experience contains less information and more emotion when compared to the sound experience, and it is not fully formed. It is temporary and uncontrolled (Porteous, 1996: 35). Topozmia examines the relationship between smell and space (Drobnick, 2002: 31). If we review the characteristics of the smell experience, the sense organ is the nose, the data received is the smell, and the transfer type is the air. Sense organ becomes effective with scent receptors. The universe is the entire smell of space.

The characteristics of urban space experienced through the sense of smell are the presence of natural elements, cleanliness, air pollution, memory, sense of space, and spatial continuity (Naghizade & Ostadi, 2014: 53). Mc Lean (2017: 143), in her research where she mapped the smells in Amsterdam, encounters in the city smells such as waffles, flowers, woody, sweet, dry resin, leaves and fresh rain, fish, coffee, spices, laundry, old books, cigarettes, canals and chocolates. Quercia and others (2015) obtained their user experience from social media to map their olfactory environment. They classified urban scents as metro, animal, cleaning, tobacco, synthetic, emission, garbage, food, nature, and industry. Gustatory experience is more subjective than others. In gustatory experience, the sense organ is the tongue and mouth, the received data is the taste and aroma, and the transfer type is the mouth through the characteristics of the taste experience. The sense organ becomes effective with taste receptors. It is subjective and formed by action. It is necessary to concentrate on taste (Naghizade & Ostadi, 2014: 60). Since the assessment of taste experience is subjective, it is excluded from the research. Walking on any street, the user experiences the floor material, the handrail by climbing staircases, and the urban space when sitting. Naghizade and Ostadi (2014: 60) divide the tactile experience into four groups according to the type and nature. The adjectives are hot/cold, wet/dry, softness / hard, and smooth/rough. Skin is directly and indirectly receptive to physical stimulants. They determine the distinctive features of tactile experience as antiquity, detailedness, interactivity, personality, directness, and acceptability (Naghizade & Ostadi, 2014: 60). The sense organ is the skin, and the data received is the temperature, humidity, and pressure through the characteristics of the tactile experience. It is direct and subjective, formed by action and reaction. Temperature, humidity, wall material, surface flexibility, stability, continuity of movement, and climatic comfort are the characteristics of urban space experienced through the tactile sense (Naghizade & Ostadi, 2014: 60). The research also excludes the tactile experience (Table 1).

The activity originates from the movement of individuals on the street, as seen within the context of the movement experience. White (1999: 185) states that designers design some roads for vehicular movement. Several factors influence life on the streets, including the demographic features of the users, the volume, direction, and speed of walkability, the presence of showcases, and the availability of eating and drinking establishments. Additionally, temporal cycles also have a role in shaping street activity. Furthermore, Tibbalds (1992: 34) has argued that appealing urban areas provide prospects for mixed-use development and a variety of activities.

Furthermore, researchers analyze movement experience with various sights and perspectives. Tibbalds (1992: 33) examined the mixed-use aspect of the activity, while White (1999: 185) focused on the routes involved. Bosselmann et al. (1999: 168) explored the relationship between activity and boulevard safety. Paasch (2015: 50) investigated the spatial dimension of the activity, while Sepe (2010: 229) examined its legibility. Gehl and Svarre (2013: 17) studied the relationship between activity requirements, and Biddulph & Council (2012: 178) explored the connection between street guides and activity. Lastly, Momtaz and Elsemary (2015: 74) suggested enhancing the activity. Gehl and Svarre (2013: 16) identified walking, standing, and sitting as discretionary activities, as seen in Table 1. The movement experience literature chart was used as a guide in determining the variables and method of the study.

Table 1. Movement Experience Literature Chart

Movement Experience Literature Chart			
Physical Space		(Tibbalds, 1992)	physical features
		(Moughtin, 1992)	urban
		(Paasch, 2015)	ground and light
		(Marshall, 2005)	physical features
		(Burton & Mitchel, 2006)	connectivity, form, material
		(Halu, 2010)	characteristic of space
		(Kost and Nohn, 2011)	physical features
		(NACTO, 2011)	pedestrian way
		(Gehl & Svarre, 2013)	characteristic of facade
		(DMURS, 2012)	physical features
		(Ewing and Clemente, 2013)	Form and sensorial qualification
		(Nasution et al., 2014)	physical features
		(Harvey and Aultman-Hall, 2016)	physical features, usage, art
		(Ercan and Belge, 2017)	pedestrian priority physical features
Space Experience	Experience	(Cullen, 1961)	movement and streets
		(Tuan, 1977)	space experience
		(Gifford, 1983)	Interpersonal distance and experience
		(Merleau-Ponty, 1996).	Body-space
		(Pallasmaa, 2006)	the necessity of seven sensory experiences
		(Lentini and Decortis, 2010)	five experience criteria
		(Temple, 2013)	experience in urban space
	Visual	(Nasar, 1984)	visual street experience
		(Porteous, 1996)	visual experience
		(Gehl, 2010)	horizontal sensory system
		(Naghizade and Ostadi, 2014)	visual experience variables
		(Noland et al., 2017)	visual experience with gaze-tracking technology
		(Simpson, 2018)	visual experience with gaze-tracking technology
	Auditory	(Westerkamp, 1974)	sound walking
		(Truax, 1984)	acoustic communication
		(Adams et al., 2008)	sound walking
		(Hong et al., 2010)	sound walking
		(Diaconu, 2011)	relationship between sensory environment and activity
		(Paquette and McCartney, 2012)	sound walking
		(Naghizade and Ostadi, 2014)	variables of urban space perceived by sound
		(Staśko, 2015)	sound walking
		(Aiello et al., 2016)	sound taxonomy
		(Radicchi, 2017)	sound walking guide
		(Porteous, 1996)	smell
	Olfactory	(Drobnick, 2002)	toposmia
		(Naghizade and Ostadi, 2014)	olfactory variables of urban space
		(Quercia et al., 2015)	olfactory taxonomy
		(McLean, 2017)	smell maps
		(Naghizade and Ostadi, 2014)	properties of gustatory experience
	Gustatory	(Diaconu, 2011)	tactile experience
	Tactile	(Naghizade and Ostadi, 2014)	tactile experience
		(Tibbalds, 1992)	mixed-use and activity
Activity		(White, 1999)	route and activity
		(Bosselmann et al., 1999)	activity and safety on the Boulevard
		(Paasch, 2015)	space of activity
		(Sepe, 2010)	legibility of activity
		(NACTO, 2011)	streets suitable for walking, running, cycling, dancing
		(Gehl and Svarre, 2013)	activity requirement relationship
		(Biddulph and Council, 2012)	street manual and activity
		(Sepe and Pitt, 2013)	legibility
		(Momtaz and Elsemary, 2015)	activity suggestion

MATERIAL AND METHOD

User experience creates street space, so this research employs a mixed method that combines quantitative and qualitative approaches. As a result of the literature study, physical space, activity, space experience, and time were determined as variables for examining the streets. The movement experience method, which analyzes life on the streets, comprises three phases. The initial phase involves a literature review. The second phase consists of the creation of the movement experience. The conclusion is the third phase. Figure 2 shows the many phases of the method. Mevlâna Street is the transportation route between Alaâdin Hill and Mevlâna Türbeönü Square. It is one of the urban backbones in Konya. When analyzing the historical process, Mevlana Street holds significant importance. There are historical buildings and religious locations. Mevlâna Street is also home to historical landmarks like İplikci Mosque, Şerafeddin Mosque, and the Konya Governorship Building. Analyzing local government policy shows that the objective is to transform Mevlana Street into a pedestrian and bicycle-friendly street. These are the reasons for Mevlâna Street to be the case area for this research. Mevlâna Street was scanned with a laser scanner, and a point cloud of the street was obtained. From the point cloud, the street's site plan, section, and silhouettes were drawn. The street was experienced on 14.05.2018 through walks in three different periods. The camera recorded the action at a height of 165 cm and reported. This experience research was conducted to determine possible differences before the case study. After determination, the street was experienced and recorded forty-eight times in sixteen days and three periods in August and September. The reason for choosing these months is that these are the months when bad weather conditions, festivals and extreme situations do not occur for the street experience.

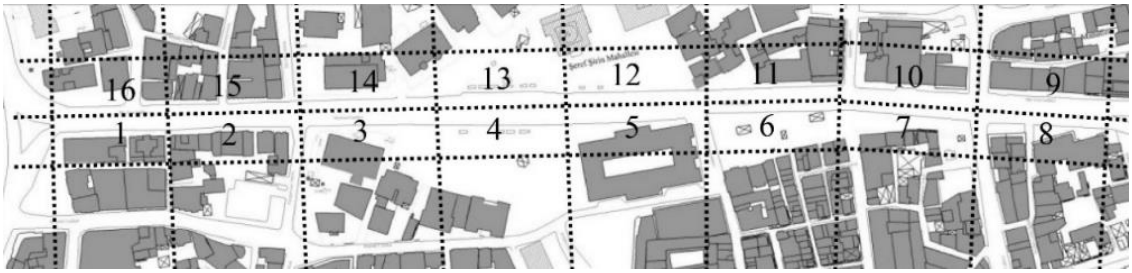


Figure 1. Space areas for the application of the model

To examine the videos and reports, the street plan was divided into 16 parts (Figure 1). Multi-category analysis of variance with different variables was done using 768 time-space sections and 17664 data. In statistical data, the space is categorical, the activity is numerical, and the experience is categorically evaluated (Figure 2). Space-activity, space-experience, and activity-experience relationships were examined according to statistical outputs. The theoretical dimension of the research consists of the production of the space, livability, life, lived space, physical space, activity, movement, and experience. The production of space is summarized by "perceived space, conceived space, and lived space," which are the three principal moments of Lefebvre (1974: 231). Street life, as a sub-heading of livability, consists of perceived space (experience), conceived space (physical space), and lived space (activity). In this research, the conceived space is considered a physical space. The sidewalk width, the number of trees, obstacles, and building height were determined as physical space variables. The number of standing, sitting, and walking users were determined as activity variables. Sense of seeing, smell, and hearing were accepted as the criteria of space experience-the experience of seeing forms the physical space of the street. Nature, human, mechanical, transport, and music sounds, which are the main topics of urban sound taxonomy in hearing experience, were included in this research. In smelling experience, nature, food, garbage, emissions, synthetics, cleaning, and industry odors, which are the main topics in urban odor taxonomy, were covered by this research. The tactile experience was constant (Figure 1, 2).

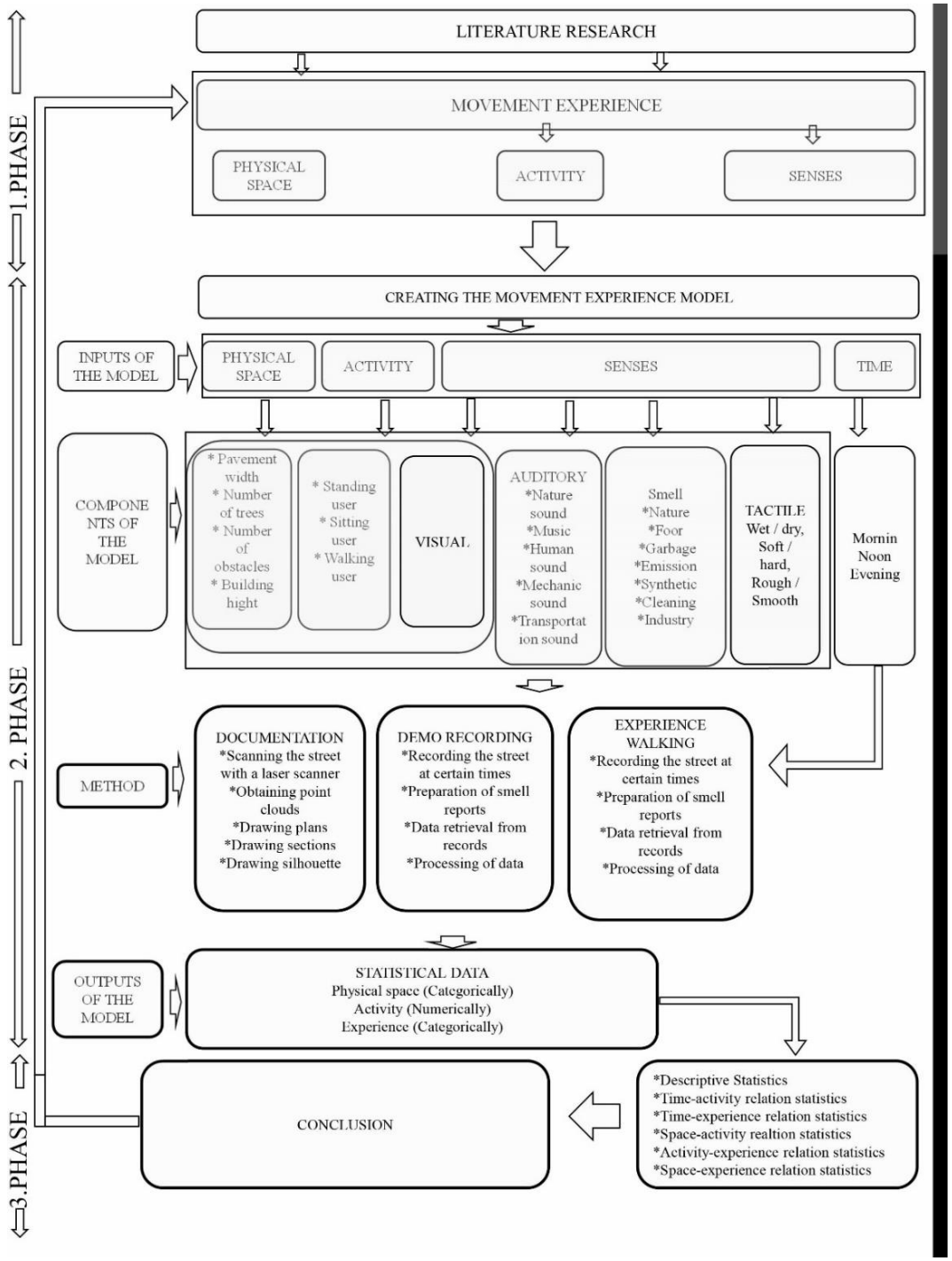
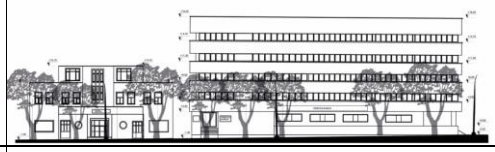
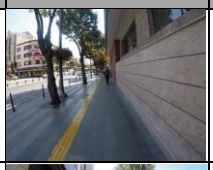
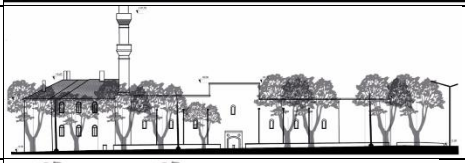
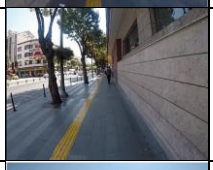
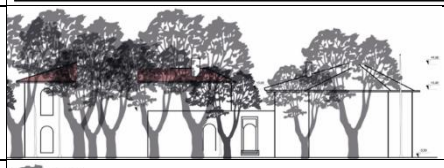
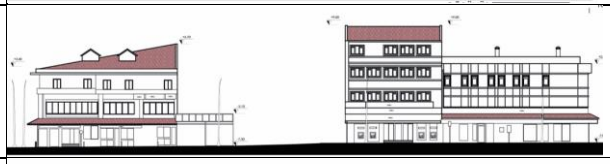
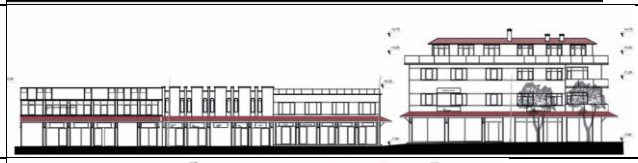


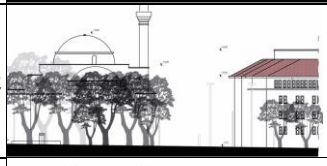
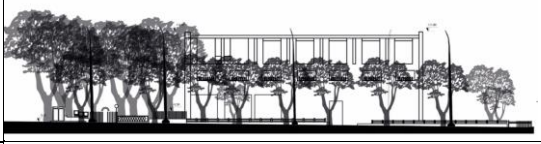
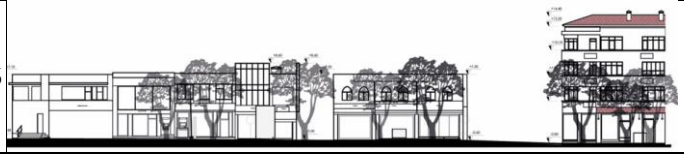
Figure 2. Movement experience flow chart

FINDINGS AND RESULTS: SENSES, ACTIVITIES, AND PHYSICAL SPACE

Mevlâna Street is along the transportation route between Alaâdin Hill and Mevlana Tomb Square in Konya. Due to its historical course, Mevlâna Street is prominent in Konya as a critical backbone and primary artery. Figure 3 shows plans, facades, photos, pavement width number of trees, number of obstacle and building hights of Mevlâna Street.

Table 2. Mevlana Street physical characteristics (space, pavement width change, tree number, obstacle number, building height change) table (c: constant, ch: changeable, s: square, no: absence of building)

Area	Facades	Photos	Pavement width	Trees	Obstacles	Building height
1			c	8	6	ch
2			c	11	7	ch
3			ch	9	3	c
4			s	43	2	no
5			c	5	0	c
6			s	0	5	ch
7			s	1	6	ch
8			c	2	5	ch
9			c	5	0	c

10			c	2	4	c
11			ch	2	0	ch
12			s	16	2	no
13			c	28	0	no
14			c	30	0	c
15			c	8	5	c
16			s	8	1	no

The walking path encompasses many establishments, including government offices, commercial establishments, and houses of worship. The path under question encompasses many notable historical structures, including the İplikci Mosque, Şerafettin Mosque, and the Konya Governorship Palace. The choice of this specific street as a case study is grounded in its historical attributes and importance in urban transportation. The street plan is partitioned into sixteen distinct sections to facilitate the implementation of the model, as seen in Figure 3. The determination of areas is based on distinct characteristics of the spaces, and each area is subdivided in a manner that aims to achieve a relatively similar walking distance. The variable representing pavement width is classified into three categories: constant, changeable, and square, as seen in Figure 3. It becomes evident that sections 1, 2, 9, 10, 13, 14, and 15 have a consistent pavement width throughout-the pavement width in sections 3, 5, 8, and 11 exhibits variability. The architectural structures are not situated in a parallel alignment with the roadway but form various angles related to the street. The buildings in sections 4, 6, 7, 12, and 16 are intentionally set back to form urban squares. The quantification of tree abundance inside street areas is determined, and spatial regions are classified based on tree count categories (0, absence of trees, 1-5 trees, 6-10 trees, 10-20 trees, and 20 or more trees). The number of obstacles in the sections on Mevlâna Street was determined and coded (no obstacle, 1-5, 6-10) categorically. When sections are examined, obstacles inappropriately located through the pavement route are lighting elements, electrical panels, and pontoons. Building height coding was made in three categories (no building, constant, and changeable). Table 2 shows that the buildings in space sections 4, 12, 13, and 16 are back to form squares. The buildings come together at the same eaves level in space areas 3, 5, 10, 14, and 15. Whereas in space areas 1, 2, 6, 7, 8, 9, and 11, the buildings have come together at the different eaves levels.

Time-Activity Relation

Time (10:00-10:20, 14:00-14:20, and 20:00-20:20) was determined as the independent variable, and the number of standings, sitting, and walking users was determined as the dependent variable. In the case study, which lasted 16 days, 48 periods were obtained. Sixteen sections and 748 time-space sections were evaluated. When the statistical outputs of the time-activity relation are examined ($p = 0.00$), significant connections are observed between time and the standing, sitting, and walking user. It is seen that the users who stand at noon (14:00-14:20) in the specified time are more than the users in other specified periods. It is seen that the intensity decreases in the evening time. It is seen in Figure 4 that the average value of the number of sitting users is 5.1289 at noon. The density of the number of sitting users, just like the number of standing users, decreased in the evening. When the number of walking users is examined, it is seen that it increases at noon. The number of sitting and standing users decreased in the specified time in the evening similarly (Figure 3).

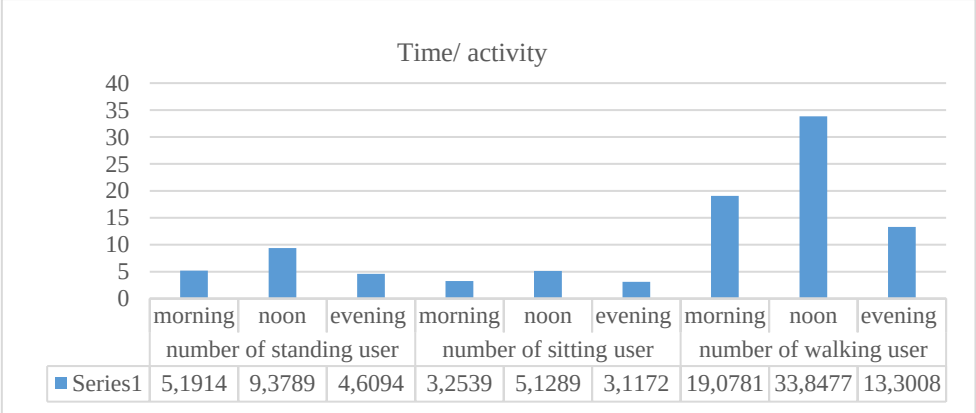


Figure 3. Descriptive statistical outputs of time interval, standing user, sitting user, and walking user

Time-Experience Relation

Spatial time sections contain the presence of human and transport sounds. The street has synthetic and industrial odors. The researchers determined significant connections between the music sound, garbage odor, cleaning odor, and time. Researcher do not detect significant connections with other variables. The music was in the morning and noon but not in the evening. The researchers detected garbage odor at the specified time in the evening. The morning and noon had no smell of garbage. The researcher felt the smell of cleaning in the morning and noon but did not feel it at the specified time in the evening (Figure 4).

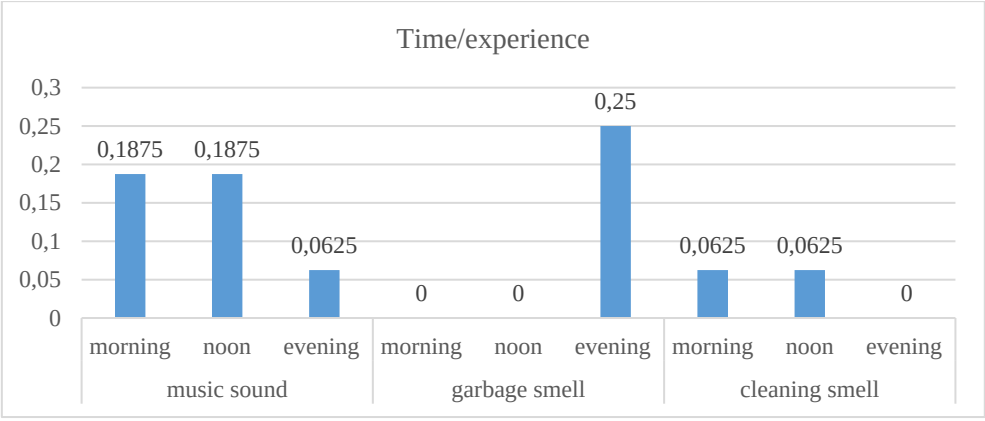


Figure 4. Descriptive statistical outputs of time experience relation

Space-Activity Relation

The relation between the number of standing, sitting, and walking users and street areas, pavement width, number of trees, number of obstacles, and building height were examined. The number of standing and sitting users was at most in section 13 and was at least in section 14. In 13, the pavement width is constant, with 28

trees. There are historical buildings in this section. The highest number of walking users was in 7. Significant relationships were found when the pavement width change and the number of standing, sitting, and walking users were examined. Figure 7. shows that the number of standing users is higher in the constant pavement width. The number of sitting users was more on the squared pavement width. As for walking users, average values close to each other were determined in three pavement widths. While standing users increase in space area with more than 20 trees, walking users increase in space area with no trees and 1-5 trees. The number of sitting users increased in places without obstacles. It was observed that the number of walking users increased in sections with 6-10 obstacles. It was seen that the number of standing and sitting users generally increased in the spaces where the pavement is square (Figure 5).

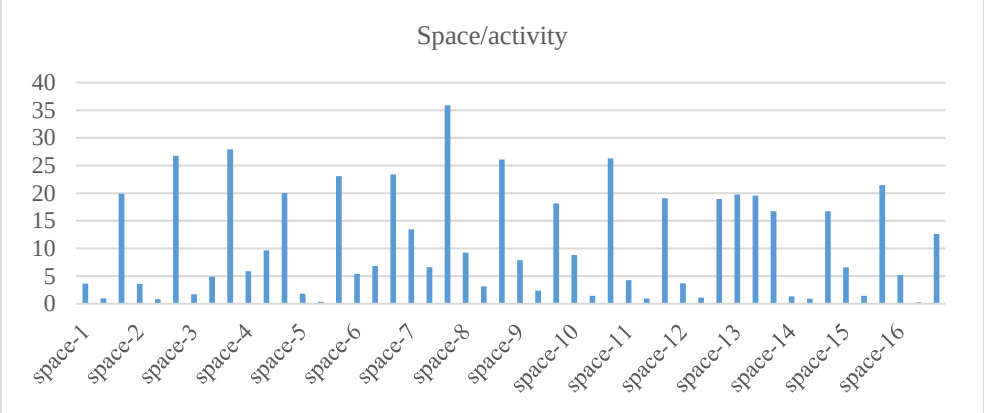


Figure 5. Descriptive statistical outputs of the relation between space area and the number of standing, sitting, and walking users

Activity-Experience Relation

The relation between the number of standing, sitting, and walking users and street areas, pavement width, Activity-space experience relation statistical outputs were obtained by examining the relations between the number of standing users, number of sitting users, number of walking users, and nature sound, music sound, human voice, mechanical sound, transport sound, nature smell, food smell, garbage smell, emission smell, synthetic smell cleaning smell and industrial smell variables (Figure 6).

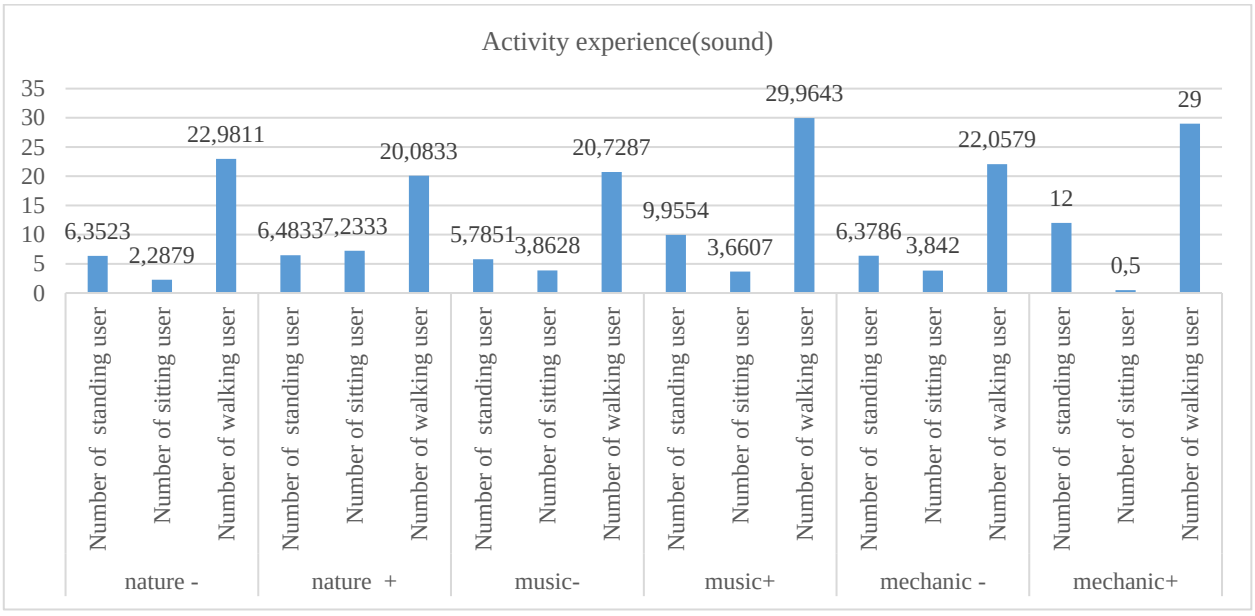


Figure 6. Descriptive statistical outputs of the relation sound experience with the number of standing, sitting, and walking users

Significant connections were found between the number of users sitting and walking and the sound of nature. The number of sitting users was high in places where the sound of nature was present. Walking users' number was high in places with no natural sound. When the relationship between activity and experience was examined, significant connections were found between the presence of nature smell and the number of standing, walking, and sitting users. The number of users standing and sitting where the smell of nature was known is higher than in the other sections. The number of users sitting and walking in places with no garbage smell is higher than in spaces with a garbage smell (Figure 7).

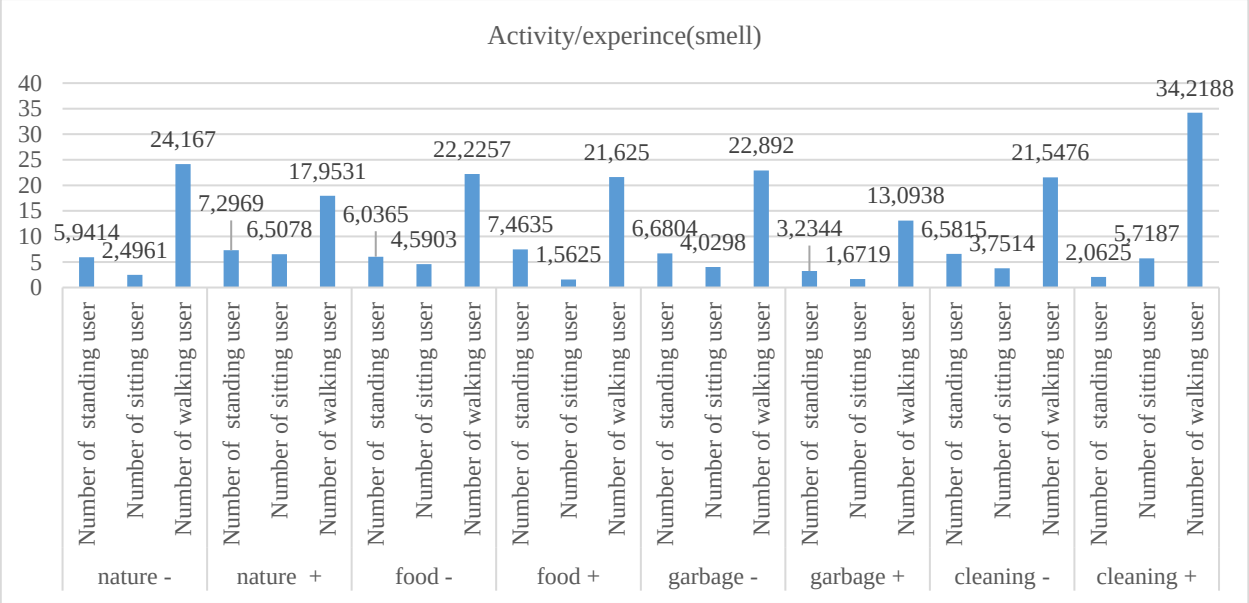


Figure 7. Descriptive statistical outputs of the relation smell experience with the number of standing, sitting, and walking users

CONCLUSION

Movement-experience is a concept that expresses the relation, communication, and interaction between sense, space, and time. If communication and interaction can be read correctly, streets are experienced with more sense organs, and Jacobs' -great streets- are formed. In this context, space is formed by time factors, physically, socially, and in a perceptual way. Streets are also composed of physical, perceptual-experience, social activity, and time, which are factors arising from the production of spaces. Experience is related to livability, but it is more about what is here now rather than what will exist in the future, such as sustainability. A subjective experience is formed. This experience tells a different story than what qualitative economic data tells.

This study starts with the belief that this formation can be read with the experience of movement and creates a quantitative study with the data obtained. More multisensory-focused streets hold all senses activities during different periods of the day. It is thought that the number of users in the evening will be increased by diversifying the opening and closing hours of the functions in the streets. At the same time, usage should be diversified through different functions in the streets in the evening. Increasing the number of users will also bring solutions to problems such as security. By diversifying the pavement width on the streets, planning and design proposals can be made to include parks and squares in the streets. The characteristic of the space on the pedestrian axis should offer the user different possibilities along with the activity and space experience. Widths should be designed in a suitable way for the user. Obstacles in pedestrian flow should be removed, or uninterrupted routes should be provided through proper arrangements. In any planning decision on the streets, the continuity of the existing pedestrian axis should be ensured. Pedestrian axes used in common with motor vehicles should not be recommended. Natural barriers should be created in the traffic flow, and opportunities should be created for the user to stand and sit. Nature sound and nature smell are essential components in street design. Users want to sit and stand in places where there is nature. For this reason, streets should be designed in integration with nature, and policies to increase green should be implemented in existing streets.

The sound of music is also one of the variables that determines street production. The sound of music as an artistic activity should be added to the streets. Thus, streets which would satisfy and please the user should be created. Places serving food and beverages on the streets should be gathered in certain areas. Suitable seating areas should be designed for food and beverage areas. The smell of garbage should be prevented and not felt on the street. Local governments should propose solutions to collect the garbage. The case study on Mevlana Street can provide data to local governments, urban planners, and architects. By digitally mapping the physical space, analyzing movement patterns, identifying activities, and exploring experiential criteria, this study aims to streamline information processes such as research, archiving, and scanning. This model can be applied to other streets as well.

Authors' Contributions

The authors contributed equally to the study.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

The study does not need an ethics committee approval certificate.

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Research Article

Cinematic space in dystopian narratives: Social construction of home in the film *High-Rise*

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Abstract
In cinema, space is an important element that provides a foundation for the narrative, establishes the impression of reality, and contributes to the aesthetics of the film. As a cinematic space, "home" also generates meanings in accordance with the universe constructed in the film. In dystopian cinema, the home image offers designs that not only serve as aesthetic elements but also open up new lines of thought at both individual and societal levels. This study aims to trace the image of the home in dystopian cinema, question the individual and societal meanings of the home as a space, and determine how it is positioned within the relevant film genre. To achieve this goal, the film *High-Rise* is selected as an example, and the spaces of home are examined in relation to Lefebvre's concept of The Spatial Triad and Freud's concept of The Uncanny following a two-phased method consisting of formal analysis and conceptual analysis. As a result of the research, it is revealed that due to the dystopian theme present in the relevant film, the home image is abstracted from its personal meanings and represented as a social structure functioning as a practice field for power struggle.

Keywords: Dystopia, Architecture, Space design in cinema, The image of home, The spatial triad

Extended Abstract

Introduction: In cinema, space is one of the important elements that provide a concrete foundation for the narrative, establish the impression of reality, and contribute to the aesthetics of the film. When cinema first emerged, it created a more direct connection to reality than other forms of art. This claim emphasizes how cinema, as an artistic medium, changed the world by introducing a new way of representing reality that was remarkably similar to people's real-life experiences. One of the most prominent aspects among the representations of reality in cinema is the use of space. Cinema, as an art form predicated on narrative and visual imagery, is inherently spatial. Viewers get a glimpse of the world on the big screen and form a genuine connection with the location they are seeing. Still, space has a lot more to offer in terms of cinematic art. Cinematographers can approach spatiality as a potent tool to reveal the artistic, political, social, and historical meanings of the cinematographic image, as opposed to seeing space as merely a formal element whose functions are limited to placing stories and providing a representation of reality (Da Silva & Cunha, 2017: 2). The cinematic portrayal of home is one of these endeavors. Home has several connotations and is a complex concept in the social realm as well as the cinematic diegesis. Dystopian films famously known for creating imaginary spaces, utilize designs of home spaces to convey multiple meanings to the audience.

Purpose and scope: By examining how dystopian narratives in film use space, particularly the image of home, this study seeks to investigate the relationship between architectural design and cinematic imagery. We looked at and identified films where the space of home takes on social meanings in order to understand the complex composition of cinematic space in dystopian narratives. The movie *High-Rise* (Wheatley, 2015) was purposefully picked for sampling because it conveys a dystopian story that explores the social, cultural, economic, and individual aspects of home. Freud's *The Uncanny* and Lefebvre's *The Spatial Triad* are used to interpret the sample film.

Method: The two-phased method of film analysis proposed by Ryan and Lenos is applied to the analysis of space as a social construct in the movie *High-Rise* (Wheatley, 2015). A quantitative formal analysis makes up the first stage, and a qualitative contextual analysis is included in the second stage. With the quantitative analysis, it is aimed to put forward the use of space in numbers. Using the video editing program Adobe Premiere Pro, the sample film was edited and its image content was separated into segments that each showcased a distinct cinematic space. The linear image sequence was interrupted every time the filmic space shifted and a new spatial setting started. It was calculated how many of these sequences there were and how long they lasted. The goal in doing this has been to define the spaces portrayed in the movie. In the second phase which is named the contextual analysis, the researcher can analyze "the meanings that permeate the movie and reflect elements of our related historical, social, political, cultural, gendered, and economic contexts" (Ryan & Lenos, 2012, as cited in Çam, 2016: 26).

Findings and conclusion: As a conclusion of the formal and contextual analysis conducted on the film *High-Rise* (Wheatley, 2015), it is observed that the use of space plays an enormous role in the meaning-creation process. As a result of the formal analysis carried out for this study, the bulk of the filmic time is spent in the apartment complex, which is made up of the protagonist's and his neighbors' homes, shared spaces, the top floor, and the exterior view. In the second phase of the analysis, Lefebvre's spatial theory is qualitatively supported by the use of space as a social construct. The apartment building that was designed as the primary location has direct influence over the characters. It causes the characters to adhere to contemporary social norms. The occupants of the apartment complex are a community, and the authority that exercises its power there dictates all of their actions. Because the space is designed to support the existence of a higher intelligence, it is in line with Lefebvre's concept of conceived space. Secondly, using Lefebvre's terminology, the narrative's change with the middle-class uprising against the ruling class can be understood as a change in space from perceived to lived. Although the characters use the space initially within the constraints of societal norms, they soon start interacting with it in their own ways. This change is also seen as the rise of individualism and the decline of community-based modernity. However, this change results in severe violence and an unsettling scenario where homes lose their privacy and become hazardous public areas.

Keywords: Dystopia, Architecture, Space design in cinema, The image of home, The spatial triad

INTRODUCTION

Narrative practices have continuously lingered in the history of mankind as a form of communication. Narrative traditions flourished in various parts of the world, narrating stories of past events and locations. These narratives were passed down from generation to generation and they had a paramount place in the public sphere because they shaped cultural identity and transmitted collective knowledge. In ancient Greece, epic narratives took place in a far-off past, in terms of both time and space (Çıraklı, 2015: 12). Although place and time were never described in detail, they were tools to connect people to distant places (Allen & Møllegaard, 2019: 1). However, with the effect of the Age of Enlightenment in the 18th century, reason as a mode of thinking roamed around the Western world and initiated a new form of narrative, namely the novel. From the start, the novel genre has been realistic about the representation of place and time. Bakhtin conceptualizes this shift from the ambiguity of place and time to specificity with the term *chronotope*. In the novel genre, time and space are described in a realistic way and they have developed into concrete and visible entities through the perception of the readers. Time and space have become an indispensable dimension of the narrative (Bakhtin, 1981: 84). At the end of the 19th century, the emergence of cinema took this realistic approach to place and time one step further. Cinema is known for being closer to reality than any other art form before. Bazin underscores the notion that cinema's ontology is grounded in reality. The photographic image has such a profound relationship with reality that it shares an identity with the object it captures (Bazin, 2022: 24). This insight shows that cinema offers a realistic vision of place and time. As a matter of fact, within cinema, space serves as the foundation that facilitates the unfolding of action. As an art based on both narrative and visual imagery, cinema is fundamentally tied to space. The audience sees a glimpse of the world on the cinematic screen and they constitute a realistic bond with the place they observe. However, space has much more to offer within the art of cinema. Rather than viewing space as merely a formal component whose functions are restricted to placing stories and offering a representation of reality, cinematographers can approach spatiality as a powerful tool to reveal the aesthetic, political, social, and historical meanings of the cinematographic image (Da Silva & Cunha, 2017: 2). In this sense, movies act as a medium for cultural and collective memory that responds to the past and present through a range of spatial forms in the narratives (Batori, 2018: 6).

Most academic discussions concerning cinematic space have focused on off-screen space as the pivotal element where chronotopic and narrative spaces intersect (Rosário & Álvarez, 2019: 2). One of these chronotopes is the image of home in the cinematic narrative. In the social sphere, home is a multifaceted issue and it stands for multiple meanings. Home can be a personal, collective, or physical space (Sixsmith, 1986: 281). Likewise, a cinematic home is not merely a product of an architectural design. It connotes intertextual meanings through the interplay between the exterior and the interior (Andrews et al., 2016: 1). One may find many illustrations of the home according to the film genre and the tone of the films. These representations of home constitute various meanings. In a rom-com, a home can be displayed as a haven, a peaceful place that represents the meanings of coziness and security. On the contrary, in a horror film, a home can be a figure of threat and create meanings of terror and fear. Likewise, dystopic narratives embody uncanny home images. Freud relates the term *uncanny* to "all that is terrible – to all that arouses dread and creeping horror" (Freud, 1955: 154). It is possible to see the uncanny attributions in the use of space in dystopian films. Considering this insight, it is observed that the use of place in dystopian narratives gives the audience an uncanny feeling. Especially, the design of the home as a dystopian space transmits the meanings of anxiety, violence, threat, and power struggle. Therefore, one could argue that in dystopian narratives home is deprived of its positive meanings and becomes "unhomely", which is a term associated with disturbing places (Avery, 2014: 4).

In light of the above, this study aims to question the relationship between architectural design and cinematic imagery through the use of space, especially the image of home, that dystopic narratives in cinema produce. In order to grasp the multifaceted constitution of cinematic space in dystopian narratives, films in which the space of home takes on social meanings were examined and identified. After careful consideration, the film *High-Rise* (Wheatley, 2015) was purposefully chosen for sampling due to its suitability in exploring the individual, social, economic, and cultural dimensions of home within a dystopian narrative. The sample film is analyzed utilizing Lefebvre's terms *The Spatial Triad* and Freud's *The Uncanny*.

CONCEPTUAL FRAMEWORK

Conceptualizing Space, Place and Home

Space, being a complex concept, has attracted the attention of many scholars as a study framework. It is noted that various scholars have defined space in different ways. These definitions sometimes seem ambiguous and contradictory. However, in its most common form, it is defined as "a boundless three-dimensional extent in which objects and events occur and have relative position and direction" as per its dictionary meaning (Merriam-Webster Dictionary, n.d.a). In this definition, the adjective *boundless* refers to the limitless characteristic of space. It is immeasurable and without restrictions. Another feature of space is that it accommodates objects and events; hence, it is an embodiment that exists through the interaction of entities and occurrences. Some aspects of this definition appear to have validity, dating back to the earliest theories proposed about space. Aristotle approached space in an ontological aspect. According to him, everything that exists is somewhere. Places must exist somewhere if everything that exists is in a place, and if places exist, then "they are in something which exists" (Morrison, 2002: 86). This notion brings up the issue of infinity. The space that covers an existence in the world stretches to infinity. This logical reasoning refers to the ontological affirmation that places embody entities that exist. From the 17th century through the modern period, under the effect of modernity and reason as its dominant system of thought, philosophy and science collaborated on issues related to both space and place. A focus on space and place is clearly observed in the works of Gassendi, Newton, Descartes, and Leibniz (Casey, 1998: 137-138). Newton (1643-1727) was the first thinker who revitalized Aristotle's theory of space in the field of classical mechanics. Newton posited that space played the role of an ontological prerequisite for the first law of motion and he defined space as "infinite, homogeneous, and absolute in the sense of existing independently from bodies". According to him, space functions as a container that allows motion to occur. Leibniz (1646-1716), on the other hand, examined space in a relational approach. From his perspective, space consists of "different bodies in relation to each other" (Rau, 2019: 10). Moreover, Kant (1724-1804) discussed the issue of space in relation to time and he defined space as "an appearance of external relations" in his early writings. This appearance is filled with substances. However, Kant later changed his discourse about space and he introduced his idea of "absolute and original

space" in which physical objects are found (Hatfield, 2006: 72). These insights of prominent thinkers of the Enlightenment era show that space was seen as an infinite concept that serves as a container to substances and materials in relation to each other.

In the 20th century, Heidegger put a central emphasis on the issue of spatiality making a distinction between space and place. It would be accurate to state that he initially carried on the Aristotelian approach to space highlighting the fact that it is a container of substances. This view can be traced in his concept of *Dasein*. The meaning of the word becomes clear when its syllables are broken down. *Da* means *there* or *here* and *sein* means *being* comprising the compound word *there-being* or *being-there* (Rause, 2021: 201). Though Dasein, as used by Heidegger, has a direct bearing on the ontological distinction between entities and their being, it is closely intertwined with spatiality, because it naturally extends to *being-there-in-the-World*. Dasein is fundamentally a concept that transpires in the world, not just in the sense that it shares space with other things but also in the sense that it constantly interprets and interacts with other things, their surroundings, and the world at large (Wollan, 2003: 34). This interplay between the subjects happening *here* and *there* demonstrates what the spatiality in Heideggerian thought is about. Space is ontologically linked with the actions of the agents. Space is not fundamentally given; rather, it exists only when it is perceived by subjects or when they take on spatial actions within the world (Rau, 2019: 214). This insight makes space an active organism that is bounded by human existence. Engaging with the world including its objects and events, thinking about the world, and finding oneself in it are considered to be the prerequisites of *being-in-the-World* (Malpas, 2004: 8). Therefore, Heideggerian view of spatiality is a social construct in which agents communicate and act through relational actions which bring back the notion that space is actually a container. However, at this point, it is worth mentioning that space refers to an abstract as well as an objective view of the world. It is commonly defined in terms of dimensions, distances and physical descriptions and it serves as a framework in which objects and beings are located. Along with space, another term that Heidegger conceptualizes in his writings is place. Although place is traditionally regarded as secondary to space (Malpas, 2006: 3), it is actually not an inclusive part of space. There is a certain kind of belonging in the concept of place (Gorner, 2007: 47). The sense of belonging attributes place subjectivity. Our experiences, memories, and feelings are all connected to the concept of place. This Heideggerian perception of the difference between space and place can also be observed in Tuan's conceptualization. Tuan states that "space is more abstract than place". Space transforms into place as one learns more about it and gives it significance (Tuan, 1977: 6). Nonetheless, the idea of social space that is utilized by Lefebvre seems to confuse Heideggerian space/place dualism. According to Lefebvre, a "socially constructed space" serves the same purpose as the concept of place (as cited in Cresswell, 2004: 10). Heideggerian and Lefebvrean concepts are frequently used interchangeably in this study to refer to social spaces as well as places.

Lefebvre is frequently cited among the most influential scholars when it comes to research on the concept of space. His book *The Production of Space* (1991) mainly suggests that space is a constructed entity, so it does not exist on its own. It is produced by people. He declares that "every society-and hence every mode of production… produces a space, its own space" (Lefebvre, 1991: 31). This well-known quote reveals the central idea of Lefebvre's Marxist perspective, stating that space is a component of society, meaning it is created within the system of economic and ideological relationships. He highlights that space plays an important role in our comprehension and interaction with the outside world. According to his view, space is an abstract concept through which people interpret and experience daily life making space "a tool for the analysis of society". Space encircles social agents and articulates the social sphere as a reality that facilitates making sense of the dynamics of society. Thus, his work proposes that space is a part of the social construction processes. He puts forward that people sculpt the environments they live in, making them fit their needs and constantly reproducing them through their experience (Lefebvre, 1991: 33-34). As a Marxist, he employs Marxist concepts like "class struggle, alienation, division of labor, and commodity fetishism", as well as the necessity of combining them with a critique of contemporary issues like "everyday life, consumption, and technocracy" (Stanek, 2011: 3).

As mentioned before, Lefebvre interrogates the social production processes in urban planning and architecture from a Marxist point of view. Lefebvre's conceptual framework, known as the spatial triad approach, offers an alternative perspective to traditional conceptions of space by demonstrating the sociology as well as the

political-economy of the production of space. This holistic approach allows to comprehend and analyze space in a social setting. In what follows, it is best to elucidate Lefebvre's concept of spatial triad in order to explain how space is produced in the social context.

Lefebvre considers space as a concept far from being static and fixed; on the contrary, the relations occuring in it are constantly on the move. According to this viewpoint, space is dynamic, ever-changing, and responsive to different kinds of influences and interactions, just like a living existence. Its essence is, therefore, essentially malleable and fluid, constantly changing. In order to examine this ambiguous concept, Lefebvre offers three interrelated aspects: spatial practice or perceived space, representation of space or conceived space, and representational space or lived space. The first division, spatial practice or perceived space, has a great association with the term perceived space because it suggests a dialectic relationship between the agents' sensory experiences and the everyday spaces such as urban, private and leisure spaces. All societies produce their own space, reproduce it and adopt it based on the needs of the inhabitants. These spaces become unique in time and respond to people's subjective perceptions. In other words, the agents of the society perceive this kind of space with their senses. In order to guarantee the regular operations of the society, a certain degree of cohesiveness and competence is required (Lefebvre, 1991: 38). Secondly, representations of space or conceived space stand for conceptualized spaces. They function as the domain of *scientists, planners, urbanists, technocratic subdividers, social engineers* who blend the art of social construction and science. These spaces, which essentially take the form of a system of spatial planning and organization, are conceptualized as theoretical constructs through mental abstraction and imagination. What these professionals merely do is connect the perceived and lived with the conceived. In every society, this constitutes the dominant space. Ideologies, power dynamics, and ideas all influence how space is perceived. It encompasses the symbolic and abstract representations of space that affect people's understanding of and interactions with the real world (Lefebvre, 1991: 38-39). The third aspect of Lefebvre is the representational spaces which are directly linked with lived spaces. People attribute symbols and meanings to the space they inhabit, so lived spaces serve as the domain where people actualize their activities and practice their emotions. Lived space is the setting for routines, social interactions, and the creation of social meanings. This division of the spatial triad highlights the meanings and lived experiences that individuals associate with space as a result of their regular interactions and activities (Lefebvre, 1991: 39).

Lefebvre's conceptual spatial triad consisting of perceived, conceived, and lived spaces gives the researchers a set of data to delve into different aspects of space. One of these spaces can be the homes where people dwell. Similar to his conceptualization of space, Lefebvre defines dwelling within a social context. He stresses that dwelling encompasses a variety of practices and behaviors that are connected to diverse social processes operating on different scales, as opposed to being limited to the physical structure of a single residence (Stanek, 2011: 86). On the other hand, Tuan's subjective description of place that is based on experience has a certain association with Heidegger's concept of dwelling. People dwell in the world and experience being-in-the-World by living in the space. It is natural to state that the first and foremost encounter of humans with the world is through dwelling. Therefore, dwelling is encrypted in the human existence. Since we always experience through a web of interactions and a lived presence in the world, the most fundamental aspect of our experience is this world, which gives our lives meaning and context. This might be called a *lived-spatiality* and it is correlated with the concept of *home* (Russon & Jacobson, 2013: 346). Home is where one experiences a sense of belonging. Therefore, we might naturally call home a place. We can also observe this association in everyday language. The words place and home can be interchangeably used. When one says "Would you like to come round to my place?", *place* means *home*. This implies a sense of ownership or a relationship between a person and a specific place, structure, etc. It also alludes to a sense of seclusion and inclusion (Cresswell, 2004: 1). This concept relies on being familiar to the place where we live in (Young, 2021: 256). However, as a place, home has many more meanings. When one checks the dictionary meaning of home, he/she encounters a set of definitions. These definitions vary as "one's place of residence", "the social unit formed by a family living together" and "a familiar or usual setting : congenial environment/habitat" (Merriam-Webster Dictionary, n.d.b). As is apparent, home is strongly tied to its dwellers and it reflects the meanings of familiarity, privacy, security and dwelling. To delve into specifics, it is necessary to refer to Després' conceptualization of the 10 categories of the meaning of home. Some of these categories include meanings of privacy, physical security, refuge from the outside world, permanence and continuity, relationships with family

and friends and ownership (Després, 1991: 97-99). On top of all that, home is a place where a single person lives or a number of people live together which makes it a part of the social construct. Accordingly, there are clear indicators that housing studies can be classified within sociological literature. In social theory, the concept of home is closely affiliated with social class, gender and ownership (Somerville, 1997: 229). According to popular discourses, even though home is a space that protects individuals from the outside world and separates the private and public spheres, it cannot escape being influenced by social apparatuses of dominance such as religion, culture, gender and class (Andrews et al., 2016: 2).

Cinematic Space and The Image of Home in Dystopian Cinema

Thus far, the idea of space has been investigated from a physical standpoint, stressing its observable properties and the ways in which it manifests physically. This section refocuses the attention to look at the representation of space in movies and the importance of these images. Instead of focusing on space as a tangible thing, we also examine how space is portrayed in movies, where it acquires symbolic meaning and transforms into a visual language, then continues with the image of home in dystopian narratives within the context of *the uncanny*.

Cinema reproduces images through its creative tools, and the images of spaces constitute a big part of this reproduction. Koeck (2013: 1) emphasizes that there is an ontological difference between physical spaces and cinematic spaces. Real-world spaces have fundamentally different layouts than those seen in movies. The spectators may temporarily inhabit the cinematic space in his/her mindset. Yet, these spaces obviously serve different material, social, and economic purposes than the spaces made possible by actual architecture and cities. While cities and buildings mainly serve as our homes and places to live, spaces depicted in moving images typically serve a narrative purpose. Cinematic spaces are brought to life on screen through the portrayal and representation of the perceived, conceived and lived spaces. Some of the terminology utilized regarding the cinematic spaces can be labeled as cinematic landscapes, cinematic cityspaces, cinematic seascapes and the like (Çam, 2016: 11). The coexistence of these spaces in the cinematic realm of constant reproduction can be paralleled to Lefebvre's notion that space is fluid and dynamic. Spatial editing in cinema which is now quite vibrant makes different kinds of spaces such as "absolute space, abstract space, contradictory space, differentiated space, appropriated space, social space, natural space, leisure space, counterspace, and so forth" intermingle (Zhang, 2010: 2). Developing this idea further, Rosário and Álvarez (2019: 1) makes a distinction between two types of cinematic spaces including those that use historical settings to depict actual locations and those that produce imagined or alternate locations in conceivable worlds. Dystopian films which depict "an imagined world or society in which people lead wretched, dehumanized, fearful lives" (Merriam-Webster, n.d.c) can be associated with imagined locations, because dystopian themes require an unreal setting with a possibility of becoming real. Along with the exterior spaces, domestic spaces can also reflect a dystopian theme. One of these cinematic spaces is the home. The home image can be deprived of its positive connotations and display a fearful and uncanny meaning. In his essay, "The Uncanny", Freud (1955) explores the sensation of discomfort or unease that arises when the familiar becomes eerie or unsettling. The uncanny, in essence, represents the opposite of the comfort typically associated with familiar spaces like home. To elaborate, the uncanny hints at a ghostly presence and explores the strange, spooky, and mysterious. It evokes the feeling of doubt, particularly regarding one's identity and perceptions. There comes a point at which one feels strangely uncertain about oneself. In other words, it refers to something that is considered to be abnormal or disruptive of the status quo, questioning the concept of private or individual ownership. This ownership is not only about the physical properties one has, but it is about every possession from one's home to one's identity (Royle, 2003: 1). Avery (2014: 3) relates the concept of the uncanny with the home image in cinema and states that home may turn to an "unhomely" figure when it fails to sustain its main functions. In other words, the unhomely, like the Freudian uncanny, refers to the unsettling way that homey familiarity can turn into something strange, unstable, and ominous very quickly.

Home, when portrayed as a cinematic space, becomes a multi-functional concept deliberately constructed for the audience's engagement with the narrative. In numerous films, the depiction of the home serves to enhance the narrative in diverse ways. At times, the house is depicted as an extension of the character, while in other instances, it assumes a role as a character in its own right. Furthermore, home is a representation of a space that serves to advance the plot and reveal details about the personalities of the characters. These private spaces

function as canvases where crucial concepts are highlighted and interior design reflects the psychology of the characters. The domestic setting provides a dynamic background against which character growth and plot are closely intertwined, frequently signifying important narrative turns (Barnwell, 2022: 1). Particularly within dystopian narratives, it is noteworthy that the portrayal of home often veers away from being a vessel for individual expression. This theme can be associated with Freud's concept of the uncanny.

METHOD

For the analysis of space as a social construct in the film *High-Rise* (Wheatley, 2015) Ryan and Lenos' two-phased method of film analysis is followed. The first stage consists of a quantitative formal analysis and the other stage merely encompasses a qualitative contextual analysis. While the formal stage requires the film to be divided into shots of space plans in order to obtain quantitative data, the contextual stage enables the researcher to examine "the meanings that permeate the movie and reflect elements of our related historical, social, political, cultural, gendered, and economic contexts" (Ryan & Lenos, 2012, as cited in Çam, 2016: 26). In the light of this two-phased method, a formal analysis was first conducted to break down the spatial components of the film and acquire quantitative data. Utilizing the Adobe Premiere Pro software, a meticulous analysis was conducted on the image sequence, with scenes being segmented each time there was a change in spatial context. The analysis involved examining the quantity of filmic spaces, the duration of each spatial element, and the frequency of their utilization, which were then charted for further evaluation. As a result of this analysis, it is observed that 5 main spaces take place in the film which are homes, shared amenities, top floor, exterior and the workplace of the protagonist as they are ranked by the duration they occupy in the image strip. With this formal analysis, the aim is to present the skeleton of the spatial elements harnessed in the film in a numerical fashion. In the second stage, the contextual analysis was carried out to reveal the social implications created by the use of space in the film. As the main objective of this research is based on the idea that space is a social construct, the analysis follows a sociological context. For the purpose of deciphering the architectural language of the filmic space, the analysis is based on spatial literature especially Lefebvre's context of *the spatial triad* and Freud's term *the uncanny*.

FINDINGS

High-Rise is a 2015 dystopian drama film based on the novel of the same name by J.G. Ballard. The film was directed by Ben Wheatley. The story takes place in a high-rise apartment complex. The storyline starts when Dr. Laing, the protagonist, moves into the apartment. The plot revolves around the inhabitants of this high-rise apartment complex witnessing the collapse of the modern social order and then finding themselves in a fierce struggle for power. As tensions between the social classes in the apartment complex grow, conflicts and violence between the residents escalate. This results in the high-tech and luxurious environment they live in quickly turning into chaos. While the film deals with the degradation of society and the unleashing of human instincts, it also presents a thought-provoking story about class differences and the darker aspects of human nature. *High-Rise* (Wheatley, 2015) stands out as a psychological thriller set in a dystopian atmosphere, making viewers question the effects of social collapse on human behavior. To analyze the spatial content of the film, a formal analysis and a contextual analysis are conducted.

Formal Analysis of the Spatial Elements in *High-Rise*

The sample film was processed in Adobe Premiere Pro video editing software and the image content was divided into pieces each of which presents different filmic spaces. The linear image sequence was cut every time the filmic space changed and a new spatial setting began. The numbers of these sequences were calculated and their durations were determined. By doing so, it has been aimed to define the spaces reproduced in the film. As a result of this quantitative formal analysis, it was observed that a total of 5 different types of spaces were utilized in the film. These spaces can be named as home spaces (where the residents dwell), shared spaces (corridors, elevators, stairs, sports centers, spa, pool, etc.), top floor (where the architect lives), the exterior (the outlook of the building) and the protagonist's workspace. All the spaces in the film excluding the work space take place in the apartment complex which constitutes the main setting of the film. Home spaces can be

observed in 45 sequences and the total duration of these sequences is 46.3 minutes which equals to approximately 44.7% of all the image content. Therefore, it wouldn't be incorrect to state that home spaces cover the majority of the overall duration and visual content of the film. The second filmic space is the shared spaces including all the common areas in the apartment complex. There are 40 sequences depicting the shared spaces and they take up 28% of the overall duration of the film. The next space that covers the most amount of time is the top floor where the architect of the building lives with his family. This space is named the *top floor* in this study because it is comprised of a house and a garden and all this space is detached from the rest of the building. The 13 sequences including the top floor cover 21.7% of the whole duration of the image content. The exterior shots of the apartment complex take up the least amount of time in the movie. 16 exterior sequences occupy 1.7% of the image time. Lastly, the protagonist's workspace can be observed in 5 sequences covering 3.8% of the image band. Based on the formal analysis conducted in this research, it is observed that the majority of the filmic time takes place in the apartment complex which consists of the protagonist's and his neighbors' homes, shared spaces, top floor and the exterior look.

Table 1. Quantitative results of the formal analysis of the film *High Rise*

	Home Spaces	**Shared Spaces**	**Top Floor**	**Exterior**	**Work Space**
Number of Scenes	45	40	13	16	5
Duration of Scenes (Minutes)	46.3	29	22.5	1.8	4

Contextual Analysis of the Spatial Elements in *High-Rise*

In the movie, the use of space has an important contribution to the narrative. In fact, the space functions almost as a character. Moreover, the spatial use of the film reveals plenty of indicators in terms of the social production of space. All the spaces including home spaces, shared spaces, top floor, exterior and workspace are depicted as the containers of social interactions. Hence, in this part of the study, the cinematic spaces are analyzed within the scope of Lefebvre's concept of the spatial triad highlighting the social aspect of the space. In this way, it is aimed to reveal the ideological functions of space as well as the class and power struggles that transpire in the space. In addition to the social aftermath of the space design, Freud's term *The Uncanny* also provides a useful basis to reveal the tension in the film regarding the use of space.

The architectural style of the high-rise apartment complex and its creation process can be examined through Lefebvre's concept of conceived space or representation of space in that it is a produced space meticulously designed by a higher intelligence. The apartment complex in the movie is built with Brutalist architecture, one of the social manifestations of modernity. Brutalism is an architectural style that emerged in the 1950s and continued to increase its influence across Europe for the next 20 years. However, the conceptual origin of this architectural style dates back to the Industrial Revolution (Clement, 2011: 8-9). At this point, it is useful to mention some of the characteristics of brutalist architecture in order to further the resemblances between the architectural style and the cinematic representation of home in *High-Rise*. The first feature of the brutalist style is the use of bare concrete as the main building material both on the exterior and in the interior of the building. The concrete is typically left unfinished, giving the building a simple and solid appearance. Another characteristic is the application of geometric forms. Brutalist buildings often feature bold, geometric shapes, including massive, block-like structures, sharp angles and repetitive patterns. Moreover, brutalist architecture exalts functionality over aesthetics. Buildings are often characterized by efficient use of space and a focus on the needs of the occupants which creates a minimalist aesthetics without excessive ornamentation. Last but not least, brutalist architecture tends to be on a monumental scale. Many brutalist buildings are quite large and imposing, often used for public or institutional purposes (Banham, 1966). The image of the home produced in *High-Rise* bears all the aesthetic characteristics of brutalist architecture. The exterior seems unfinished because no coating material is used leaving the building with the look of plain concrete. Moreover, the building has a substantial size which gives the impression that it is built to contain a large community. The interior spaces also possess the characteristics of brutalist architecture. The walls and columns are all sharp-edged and positioned in a geometrical shape. It is hard to talk about a tasteful decoration in the homes. Functionality is rather more prioritized.

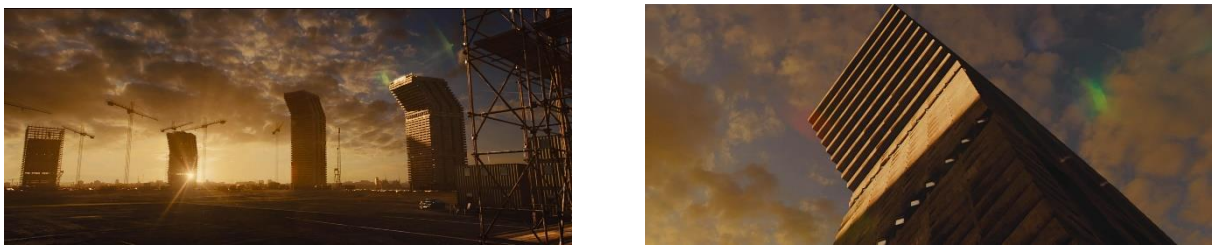

Figure 1. The exterior look of the apartment complex in High-Rise

As mentioned before, brutalism has its roots in the Industrial Revolution and it has a certain parallelism with modern ideals. The economic and cultural shifts of modernity brought with it the rise of nation-states which is a system that prioritizes community over individual. Modernity puts forward the image of a rigid human being striving for progressive ideals. In order to fulfill the needs of these modern progressive ideals, members of the society should work together and form a mechanism that enables a sustainable governing system. Remembering Lefebvre's idea that all societies build spaces of their own, it can be claimed that one of the products of modern society is the brutalist architecture. In this case, the image of home including both the exterior of the apartment complex and the interior spaces in *High-Rise* becomes a metaphor for the modern society residing as a community. The apartment offers a micro reflection of the modern world. The people living there act as a community and can fulfill all their needs within the building without ever going outside. Public spaces such as sports centers and supermarkets have been built within the building, providing the social spaces necessary for people to form a community. Even the balconies of the apartments face each other. Therefore, it can be argued that the building was built in accordance with the modern nation-state point of view. In parallel, the homes, especially the middle-class ones, are far from reflecting personal style. The bare concrete walls and the simple and featureless decoration with sharp lines do not reflect any personal characteristics of the resident. The minimalist decoration looks depersonalized and reflects social functionality, not individual expression.

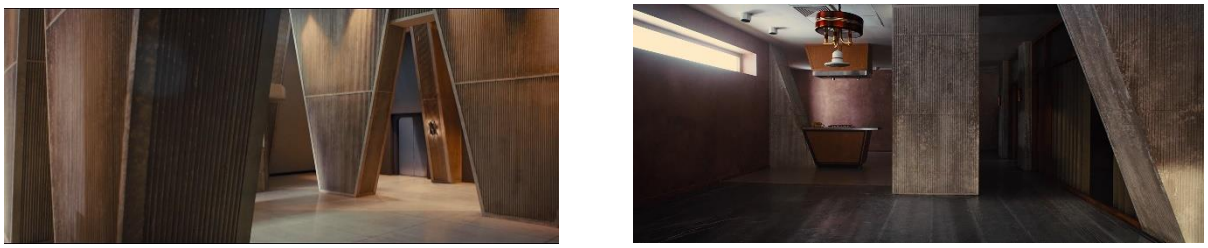

Figure 2. The interior look of the apartment complex in High-Rise

The creator of the complex lives on the top floor and the residents are scattered through the other floors according to their social status. This order of placement shows that there is a solid social hierarchy in the building and; hence in the community. While the upper class lives in tastefully decorated homes, the middle class inhabits minimalist ones. There are clear indicators that the ones who have economic power look down on the others. However, both the bourgeoisie and the working class live in the same social sphere as is the case in modern cities during and after the Industrial Revolution. Explained in Lefebvre's terms, the whole apartment complex stands for a conceived space. It is intricately designed with the intention of sustaining the power relations inherent in modern society, thus rendering it a social construct designed by a superior intellect. The presence of the character of the architect residing above all others evidently shows that the creator of the space functions as a mediator of the social agents. As the revolt from the lower floors escalates, the architect tries to ensure his superior place in the community; however, he fails to do so. The individualism crisis festers into a significant social revolt against all the norms that the modern ideals have built. The decay in the societal order results in a shift in all the values, and the power relations overturn. Suddenly, the members of the community seem to lose all their senses and act impulsively turning to violent acts. The collapse of a society based on rigid values and the transformation of the image of home from being a haven to a menace coincide with Freud's concept of *the uncanny*. The house, which is expected to be a safe place where the individual can keep his/her life under control, turns into an uncanny and dangerous place. The strict order of the building is destroyed and

replaced by a circle of chaos. Houses are looted and people violate their neighbors' spaces, disregarding the seclusion that private spaces require. The distinction between private and public space disappears and the rules of the modern society are broken. In this case, the transformation of the characters and the transformation of the house are handled in parallel. Further to the above analysis, the traces of Lefebvre's perceived space or the spatial practice and lived space or the representational space can be found in the residents' routines in using the spaces and the shift experienced in practicing these routines. At the beginning of the movie, Dr. Laing moves in the apartment and he enjoys the home and the facilities of the building. He sunbathes on the balcony, does sports in the sports center, shops for groceries in the supermarket, meets the neighbors and goes to a party. He makes use of the facilities the architect designed for the residents. Dr. Laing's use of space without really articulating the social hierarchy that the space itself creates can be correlated with the concept of perceived space. He acts like he is not aware of the economical reductionism that the designer imposes on the space. He just experiences the best out of what is presented to him. In other words, he perceives the space according his terms excluding the real designated purposes. Likewise, the other residents of the building seem to establish a similar way of living in this complex. They organize parties and socialize. They have even developed a certain way of collective behaviors. They are seen in the corridors, elevators and the hallways commuting to work. In other words, they take advantage of the space as they can. However, they seem unconscious of the socially discriminatory circumstances that the design of the space has created. This shows how the community perceives the space and how the members act on it.

As the story unfolds, a power struggle bursts between the two economic classes. The members of the community start to rebel against the authority when they realize that they do not get as much service as the residents on the upper floors. The first act of rebel the middle class opts for is to take their children to the pool when they are not supposed to. This act initiates a series of events that forcefully confront the two classes with each other. The members of the middle class gradually increase the dosage of their movement so that they can be more visible to the eyes of the upper class. This act turns to extreme violence shortly and the whole system collapses when the rebellions take over all the space in the apartment complex. The clear distinction between the private and public spaces disappears as well as the boundaries between the social classes. All the values the modern system has built vanish. This shift can be interpreted as the fall of collectivity and the rise of individualism, because in the resolution the building undergoes a creative transformation. Dr. Laing begins to personalize his home by painting the walls. The collapse of modern society and the rise of a new social order is shown through the customization of the house. This change in the space along with the social order can be elucidated as a conversion from perceived space to lived space. While people act according to the social norms in the first phase, they start to take action and own the space by attributing meaning to it in the second. They eradicate the rules of the system and experience the space on their own terms. Human agency makes the home a lived space and the personal meaning that is attributed by the resident himself/herself indicates that the space has transformed from being perceived to lived.

CONCLUSION

Cinema has a certain power to reproduce and represent what is hidden and what is not clearly noticed in life. Therefore, it has a strong correlation with reality. Even when it depicts a hypothetical world, it may constitute a relation with reality. Dystopian films serve a similar function; they create an imaginary world that may come true. In this research, the use of space -particularly the image of home- that dystopian narratives in film generate is intended to raise questions about the relationship between architectural design and cinematic imagery. Taking the film *High-Rise* as a sample where the home space takes on social meanings, we interpreted the complex composition of cinematic space in dystopian narratives. Through a thorough examination of the film utilizing Lefebvre's concept of the spatial triad and Freud's concept of the uncanny, several significant insights emerged. Firstly, it was observed that the space in the sample film is socially constructed. The apartment complex created as the main setting has direct control over the characters. It leads the characters to follow the rules of modern social norms. The residents in the apartment complex form a community and all their behaviors are determined by the authority which practices its power through the space. The designed nature of the space aligns with Lefebvre's conception of conceived space because it serves as a framework to sustain the existence of a higher-intelligence. Secondly, the shift in the narrative with the revolt of the middle class against the

authority can be regarded as a transformation of space from perceived to lived in Lefebvre's terms. While the characters initially utilize the space within the confines of societal norms, they subsequently begin to engage with it on their own terms. This shift is also interpreted as the fall of community-based modernity and the rise of individualism. On the other hand, this shift leads to extreme violence and creates an uncanny situation that the privacy of the homes comes to an end and they all turn to dangerous public spaces.

All in all, this research highlights the importance of cinematic space as a creator and mediator of meaning. Taking this work as a stepping stone in the intersection of cinema and spatial studies, film and urban researchers may further explore the meaning of space in the context of urban transformation process in social realist cinema or independent cinema.

Authors' Contributions

The author confirms that he is the sole contributor to this manuscript. Therefore, the author contributed 100% to the study.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

Ethics committee approval is not required.

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Figure References

Figure 1-2: Wheatley, B. (Director). (2015). *High-Rise* [Motion Picture].

Author's Biography

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Research Article

The effect of digital technology on graphic design ideation output

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Abstract
Digital technology has changed the face of design creativity. The traditional dependence on paper and pencil is gradually replaced with the digital approach, which uses digital technologies during the ideation stage. This study explores how digital technology influences the graphic design ideation process and outcomes. This study adopts qualitative methodology as it ontologically assumes a subjective stance and is epistemologically constructive in nature. The methods of data collection adopted are interviews and observation. The twenty-eight (28) participants of the study were made of twenty-four graphic design students and four lecturers from two universities in Ghana. It was discovered that participants used digital devices, design software, and the internet during design ideation. The study also revealed that digital technology aids designers in generating a variety of quality ideas which helps in achieving novelty in design. Vector software is crucial for digital concept illustration, but less than half of the participants use it. It was recommended that students should be exposed to vector software for design ideation as constant use of this software will help them develop the fluency required to create digital design ideation with ease.

Keywords: Design ideation, Digital technology, Design inspiration, Design software and ideation outcomes, Graphic design training

Extended Abstract

Introduction: Design idea development, also referred to as design ideation, started several decades ago. The concept of ideation is essentially the exploration and transformation of conceptual spaces to generate ideas. It is the most creative and essential aspect of the design process because the quality of the final design solution is greatly dependent on the quality of the initial idea generated. Digital technology has also affected current design approaches among students in institutions of higher learning (Sreekanth & Viswanathan, 2019: 39). As stated by Barnes (2017), the use of computer software for creative design is gradually replacing the traditional way of hand drawing, which has become an inevitable trend. Easy access, use and continuous improvement of these technologies have completely transformed how things are done in today's world and this has resulted in a considerable change in the expectations of consumers over time. The use of traditional approaches to problem-solving does not attract recommendations anymore as these approaches fail to meet the expected standards of today's clientele. They expect to interact with digital images from the beginning to the end of the design process. It has become necessary to adopt digital technologies in the design ideation stage to meet today's clients' expectations. It is, therefore, important for students to know the various technologies being adopted and master the use of the digital technologies employed in the current design ideation process for effective ideation and customer satisfaction.

Purpose and scope: This study seeks to identify the various digital technologies used among graphic design students, how they are used and their impact on design ideation outcomes. The study is backed by the following research questions: 1. Which digital tools do designers use in today's graphic design ideation process? 2. How do these technologies impact on ideation outcomes regarding the quantity, variety, and novelty of design ideas? These questions were answered by first exploring the various digital devices and software that are generally used at each stage of the design ideation process. Ideation effectiveness can be measured in terms of quantity, quality, variety and novelty (Shah et al., 2003: 113). The study, therefore, explores the impact of digital technology on the quantity, variety and, novelty of ideas developed. Data collected from the participants were presented, analyzed and recommendations were given to improve design ideation practice.

Method: This study assumes the constructivist and interpretivist paradigm because individual students have different digital exposures, design approaches, design experiences, varied studio environments (setups) and technology fluency. This can only be understood and appreciated when hidden facts are communicated and interpreted. By this, the subjective interpretations of the various participants can be reconciled and the differences that make the phenomena complex will be exposed. Constructivism allows a flexible process of interactions between the researcher and research participants (Bhatta, 2018: 73), which leads to openness and richness of data. As a result of this epistemological stance, the research methodology adopted is qualitative in nature, and the methods of data collection adopted are interviews and observation. Purposive sampling was conducted to select only lecturers who taught ideation-related courses like Graphic Application, Advertising Design and Computer Graphics because they had the needed information and formed the most appropriate participants. Student participants were purposively grouped into three categories: first-class, second-class upper, and second-class lower students.

Findings and conclusion: This section presents the findings on how digital technologies affect design output. It examined the various technologies used by the designers in the design ideation process in two selected Ghanaian universities. The essence of this chapter was to identify the various digital devices and applications software used by the designers and how they affect design ideation outcomes. It was generally observed that the devices used by students include laptops, smartphones, tablets and digital cameras. Students predominantly use their personal laptops and smartphones for their design tasks. While the laptop is seen as the main digital device necessary for design in general, the smartphone is considered to be one of the most important device that supports the laptop for effective design ideation output. It is almost impossible for a graphic designer to work without a smartphone. Participants considered this device to be so important that they wondered what the design work will be like without the use of it. While students widely use the phone for quick access to information, gathering images for inspiration, and for research purposes, it is also used as a source of internet for browsing on their laptops. Most participants admitted using the data on their phones to access the internet connection on their laptops because the Wi-Fi on campus is not reliable. The smartphone is highly indispensable in the design ideation process. It was evident that students used smartphones as a substitute for the computer. They reported during an interview session that they sometimes use Adobe applications and some other software to do their design works on the phone. According to them, they use the phone when the laptop is not readily available. This is helpful as it saves time and the work output is as good as that of the laptop in terms of quality. The impact of digital technology in ideation includes gathering inspirational materials in great quantities for ideation using the internet, manipulation of vector types of images to obtain varying ideas and testing color variations. By these inspirational materials, designers were able to generate more ideas from which creative ones were selected. Lack of personal access to laptops among some of the students was a significant concern, and the institutions needed to intervene to help students in such a situation.

Keywords: Design ideation, Digital technology, Design inspiration, Design software and Ideation outcomes, Graphic design training

INTRODUCTION

Technology is always connected with obtaining certain results, resolving certain problems or completing certain tasks using particular skills, employing knowledge and exploiting assets (Lan & Young, 1996). The concept of technology does not only relate to the technology that is embodied in a product, but it is also associated with the knowledge or information of its use, application and the process of developing the product (Bozeman, 2000: 629). Mishra and Koehler (2008) make a distinction between advanced and standard technologies in education, referring to *standard* technologies as books, chalkboards, and blackboards and *advanced* technologies as the Internet, digital video, operating systems, application software, web browsers, email programs, and word processing application. Bates (2015) considers technology to include all tools used to support teaching and learning, whether or not they are in the form of computers, software applications, or

printed books. Bates gives two definitions of technology, stating that the definitions range from the basic notion of tools to systems that employ technologies and these are:

i. Technology refers to tools and machines that may be used to solve real-world problems
ii. Technology is the current state of humanity's knowledge of how to combine resources to produce desired products, solve problems, fulfil needs, or satisfy wants.

A careful look at these two definitions of technology indicates they are divergent because while the first definition focuses on tools and machines as technology, the second one focuses on knowledge, skills (how to combine), tools (resources) and the desired solution as technology. This is to say the clause, "humanity's knowledge of how to combine resources" in Bates second definition can be replaced with "human skills".

According to Jon (2020), technology is a means to an end. Short though this definition is, it is embedded with a lot of details. It suggests that technology is a means to solve a problem. In other words, technology has to be a contrivance. For technology to be a contrivance, skill is required because there cannot be creativity without skills application. This is why the statement made by Levin (1996) that technology is not a "thing" but *it is better characterized as an approach* makes a lot of sense. It is the application of scientific principles to solve practical problems. Levin's view about technology is closely linked to the assertion of Burgelman et al. (1996) as they posit that technology is theoretical and practical knowledge, skills and artefacts that can be used to develop products and services. In this definition products and services are considered as solutions to problems. It can be deduced from Burgelman et al.'s statement that theoretical and practical knowledge itself is not the technology but the use (in other words, the application) of it to solve a problem (develop products and services) that makes it a technology. Again, the "skills" or the "artefact" is not a technology but the use of it to solve a problem makes it a technology. With this, it can be said that technology has three components; 1. a thing (it may be theoretical and practical knowledge, or artefacts), 2. Process (skills or the demonstration/ application of practical knowledge) and 3. Solution or Result (products and services).

It is the search for solutions or the existence of problems that necessitate the generation of technology. In other words, where there is no problem, technology is of no use because technology is invented principally to solve a problem. The use of the tool (artefact or device) to solve a problem is what makes it a technology. The word "use" in "The use of tool" embodies the application of technique, know-how or skills. It suggests that without the "use" (application of technique, knowhow or skills) the tool cannot accomplish a task or achieve a goal. The principal idea here is that technology is a problem-solving mechanism. Until the device is used to solve a problem, technology is not achieved. It is understood therefore that technology is not a thing (artefact, tool or device). Again, technology is not a skill (technique or know-how), neither is it a product (expected end or result). These three components -a thing (artefact, tool or device), skills (technique or know-how) and solution (product, service or expected result) are very important to give the word "technology" its holistic definitions and it is inappropriate to isolate one out of these three components and term it as a technology. Each of these three things plays an important role in the definition. Therefore, technology in the context of this study, is a practical process of skills application on a tool to solve a problem.

Based on this understanding of technology, this study examines the three components of technology (tool, skills/process and solution/outcome) involved in digital ideation in graphic design. This suggests that in a digital design environment, it is expected that the designer is knowledgeable about the digital devices and applies the needed skill to the devices to solve design problems. Thus, the various digital tools used by the design students, the digital skills applied and the ideation outcomes are of great interest in this study.

Digital Technologies

There is an abundance of available digital technologies that can be benefited from in and outside of the class (Ng, 2015: 188). Regarding the need for technology, Ng suggests that digital technologies support students by increasing their motivation, developing their minds, providing real-life-like experiences, enabling research, promoting communication and collaboration, promoting higher-order thinking skills and critical thinking, maintaining learning in out-of-school contexts and catering for multimodality.

In a study conducted in two Australian universities to explore factors shaping students' engagement with digital technology within the university settings, Henderson et al. (2015) classified the digital technology resources

used by students into two categories namely: 1. official and non-official digital technologies resources and 2. non-official use.

The official digital technology resources include the following:

a. Learning Management System
b. library online resources to find information
c. E-books or e-textbooks
d. Software specific to my study area

The non-official digital technology resources used by students are:

a. Internet search engines to find information
b. Search for papers/journals
c. audio recordings or videos (YouTube, Vimeo)
d. Social networking sites for working with other students
e. web-based document for working with other students
f. Freely available courses and educational content online

It is seen in this literature that Henderson and others did not make mention of any digital (electronic) device but referred to these online resources as digital technology. This is because these search engines are accessed on digital devices to execute tasks.

In his attempt to define digital technology related to education, Lindqvist (2019) posits that digital technology refers to online resources, learning management systems, programs and applications and digital tools such as laptops, tablets and mobile phones that are used for supporting teaching and learning. The author added that this allows the storage of large amounts of media files, documents and other data in small spaces or devices. Lindqvist's definition can be put into four different categories and these are 1. Software (online resources, programs and applications), 2. Hardware (laptops, tablets and mobile phones), 3. Skills application (used for) 4. Solutions or results (Ideation and design outcomes). Technology is the combination of these four components (software, hardware, skill and solution). There must be a complete integration of all four to term it a digital technology. The omission of one makes the definition incomplete. Lindqvist's definition supports the fact that digital technology is not a tool or a product but the application of skills on a device to solve a problem. The definition is directly linked to Levin's (1996) definition of technology as a problem-solving process as indicated in Figure 1.

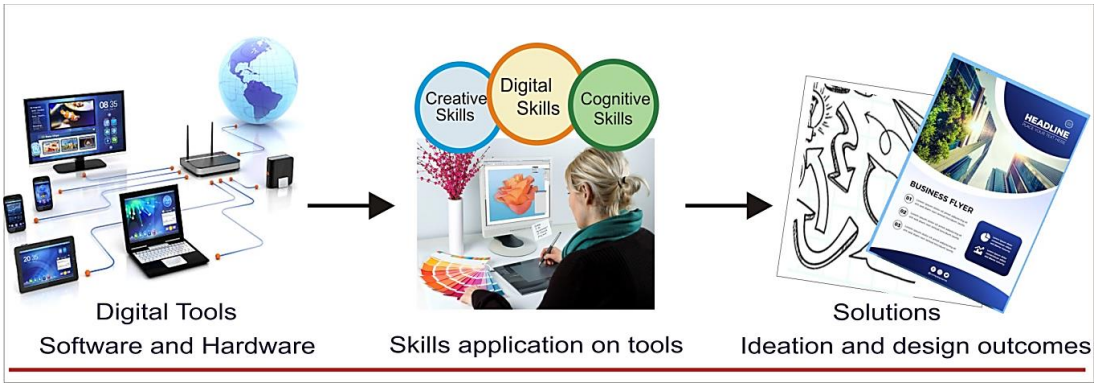

Figure 1. The application of skills on digital tools to solve a problem (technology)

Min and Hao (2008) assert that digital technology has brought new understandings of design space and user experience. This has offered various digital design tools that support design processes and decision-making in design practice. Radhika (2018) indicates that the main purpose of digital technology is to enable individuals to collaborate to achieve common goals and objectives, enhance productivity, and improve skills, abilities, and expertise among human resources. Min and Hao posit that digital tools enable designers to have more time and cognitive energy to concentrate on problem-framing and solving.

In this study, digital technology is broadly used to represent the use of digital devices and design application software, with or without the internet, to solve a design problem. Digital devices, as mentioned, include but are not limited to computers, laptops, digital camera, stylus, tablets and smartphones and the design software includes but is not limited to CorelDraw, Adobe Photoshop, Adobe Illustrator Adobe InDesign, Adobe Capture, and Adobe Lightroom.

Because digital devices cannot be used without application software installed on them, the term, "digital device" is simply used, in the context of this discussion, to refer to the digital hardware and the application software installed on it. However, if a discussion seeks to address an issue regarding a particular digital device in terms of its hardware, the specific name of the hardware will be mentioned. Likewise, the name of a software application will be mentioned if a discussion focuses only on a particular one.

According to Jonson (2005), digital technology serves as a tool for idea conceptualization in addition to technical drawing. Wang (2020) believes that digital tools make design work more convenient with good quality. Aboalgasm and Ward (2014) mention that digital tools enhance creativity and artistic expression. Again, Hods (2008) believes that drawing tools can be manipulated with ease and are capable of linking ideas and concepts in a dynamic manner later. In their study, Veisz et al. (2012) reported that there has been a substantial drop in using pencils at the initial stages of the design process among students as they prefer digital tools instead of simple freehand sketches to communicate their ideas. Although digital technology is becoming more prevalent in the design process, no study has conclusively established how this technology affects the quality and novelty of graphic design ideas. This study therefore explores how digital technology influences the graphic design ideation process and its impacts on the novelty and quality of graphic design ideas.

METHOD

The participants in this study have different digital exposures, design approaches, design experiences, varied studio environments (setups) and technology fluency. The varied realities of each design student's level of design experience, skills and exposure to digital technology can only be understood and appreciated when hidden facts are communicated and interpreted. By this, the subjective interpretations of the various participants can be reconciled and the differences that make the phenomena complex will be exposed. Constructivism allows a flexible process of interactions between the researcher and research participants (Bhatta, 2018: 73), which leads to openness and richness of data. As a result of this epistemological stance, the research methodology adopted is qualitative in nature and the methods of data collection adopted are interview and observation. Qualitative researchers draw relatively small samples from a large study population entirely made up of fairly eligible members (Asiamah et al., 2017: 1609). The sample for this study is drawn from the third and fourth-year graphic design students in a Traditional University and from the second and third students in the Technical University and the sample size for the study is 28 participants in all. This is made of twelve (12) students and 2 lecturers from each of the two universities. Because of the specific data needed on design ideation in this study, purposive sampling was conducted to select only lecturers who taught ideation-related courses like Graphic Application, Advertising Design and Computer Graphics. They have the needed information and formed the most appropriate participants. Student participants were purposively grouped based on the three categories specified -that is first class, second-class upper and second-class lower students. Random sampling was adopted to select six participants from each of the three categories of classes in each selected year group in the study universities. After the selected students were well informed about the study being conducted and had signed the consent form, they were observed and interviewed on a one-on-one basis. The qualitative data, which was collected from the 15th of February to the 24th day of May, 2023, was analyzed using Braun and Clarke's (2006) six-step thematic analysis. This was combined with a phenomenological data analysis approach. From phenomenologist's point of view, the researcher explored the "noema", "noesis", and "essence" of the data. This can also be referred to as "the what, the how and the why" of the data.

FINDINGS

The aim of this study is to identify the various digital devices and applications software used during the design ideation process by graphic design students in the two selected Ghanaian universities and how they affect ideation outcomes.

Digital Devices Used by Students during Design Ideas Development

Data collected revealed that graphic design students were at liberty to adopt their preferred approach to design ideation. This is to say the student decided whether to opt for a pencil and paper approach or use digital devices for idea development. Concerning the possession and use of digital technology, all the participants had smartphones and almost all, except one participant, had laptops. Two (2) participants used only a laptop for design work. These participants did not even use the phone for design research or search for design inspiration but strictly used the laptop for anything related to graphic design. Only one (1) participant used three (3) devices and these are Laptop, smartphone and tablet. The rest used laptops and smartphones. None of them used smartphones only for design work. Smartphones have always been used in combination with laptops.

In response to an interview question, "Which digital devices do you use for graphic design work?", the participants have this to say:

> Laptop and mobile phone. Sometimes I do work on the mobile phone and transfer it to the laptop. There is application you can use to design on the mobile phone. If I am not with my laptop and I have to design now, I will work on my mobile phone. We use Hotspot to connect the internet to the laptop. (Participant KN 2c)
>
> Some software like lightroom used for manipulating photos. I have the phone version that I have been using. (Participant KN 2b)
>
> The phone. Actually, we have Adobe software on it that can be used for design. (Participant 2b)

As stated by Hazali et al. (2018), mobile applications are designed and used for handheld devices such as smartphones or tablets. It is possible to make awesome graphic designs using just your phones and people who do not have good personal computers or graphics tablets can start their graphic design career on their smartphones (Ahmed, 2021: 1). The author states that Adobe and other popular graphic design software companies have developed several applications to help people design even if they do not have computers. Available mobile applications that can help the designer, according to the author, are Adobe Capture, Adobe Lightroom, Photoshop Fix, Adobe Comp, Canva and Adobe Spark. According to Superprof (2023), applications such as Autodesk Sketchbook, Adobe Illustrator Draw, and Procreate can be of great help to designers.

- Details of some of these mobile design applications are explained as follows: Adobe Photoshop Express-great for making collages and adding some flair to your designs. One can use this app to add text and filters along with making stickers for designs.
- Adobe Lightroom-for basic editing, cropping tools and a large number of presets, filters and styles. Lightroom has easy-to-use sliders that can be dragged up and down to add or reduce the impact of a filter or effect placed. It has an intuitive interface and is great for everyone from professionals to beginners.
- Adobe Photoshop Fix-This tool helps to remove any unwanted bits from one's design. It is similar to the healing tool in Photoshop and uses content awareness which basically means it will not affect the design while editing.
- Adobe Photoshop Mix-It is an application used to cut out and combine elements together in a single project. Similar to selecting an object in Photoshop, then cropping and dragging it to another project.

A number of these applications are designed by Adobe and this is because Adobe is the industry-standard software for graphic designers. They are readily available and easy to install. Of all these applications, Adobe Capture is the most versatile for graphic designers. It allows the designer to use the phone's camera to take photos and then use Adobe Illustrator to identify the kind of fonts, colors and styles that were used in the photo. Hazali et al. (2018) posit that mobile applications have been widely used in line with today's technology as handheld devices become more powerful.

Smartphones and other handheld devices are built for internet communication, information retrieval, images, video, and other features with countless useful applications that render the device as a need and the most sought-after one in today's age of technology gratification. Mushroor et al. (2020) indicate that the advent of touch technologies and the use of smartphones and mobile devices have made humans embrace technology and extensively dependent upon them.

Students' Use of Vector Software

The vector software used by students in both universities are Adobe Illustrator and CorelDraw. Thirteen (13) of the participants know how to use vector software. Out of this, nine (9) can use both Adobe Illustrator and CorelDraw. However, among the thirteen users, three (3) of them said they were not good at using Adobe Illustrator. This means only ten (10) among the participants can use Adobe Illustrator well. It is clear from this data that less than half of the participants use the vector software that are needed for digital illustration.

In response to a question, "Which software do you use?" one of the participants said:

> Photoshop and premier. I am not really conversant with Adobe illustrator. I used to have Corel but now I don't even have on my laptop. (Participant 5a)
>
> Photoshop and InDesign. I am not good in using illustrator. I want to learn illustrator. I will be happy if I know how to use it. (Participant KN 1a)
>
> I use InDesign, Photoshop and Adobe illustrator but I am not too good at Adobe illustrator. (Participant 3e)

As can be seen, the three respondents know how to use Photoshop. It was discovered that all the participants, except one of them, knows how to use Adobe Photoshop. That is to say almost all the students know how to use photo manipulation software. This software was used most often by students in their design tasks.

Clearly, the responses indicate that students had problems working with vector software. This is because they were not taught how to use them.

As already established, less than half of the participants know how to use vector software. There is the need for a shift to the approach of design skills development where digital technology is integrated into the idea creation stage to meet today's standards. Vector software such as CorelDraw and Adobe Illustrator help designers digitally illustrate ideas to a perfect representation of what is imagined or sketched in pencil to achieve desired ideation outcomes in terms of intricate creative details and aesthetic qualities. Students' inability to digitally illustrate intricate and complex design details in vector software influences their selection of pencil sketches for digital illustration and this affects their creative outcomes. Thus, students' inability to transform their best pencil sketches into digital forms affects their design outputs as they tend to select very simple pencil sketches for digital illustration because of their limited skills in the use of vector software.

Newer and more advanced technologies have been introduced, and individuals are learning new skills. Technology has improved beyond imagination (Ng, 2015: 189), and different software has made it easier for people to come out with new designs without having constraints that were associated with the traditional methods of graphic designing (Walter & Chimanga 2018: 29). The author adds that newer technologies cause people to imagine new designs that are not possible without the new software. The transformation brought by technology has resulted in a considerable change in the expectations of consumers over time such that the use of traditional approaches to problem-solving does not attract recommendations anymore because these approaches fail to meet the expected standards of today's clientele.

This is why graduates being produced by institutions of higher learning have to be acquainted with current approaches to solving problems. However, as noted by Sheila and Waarde (2020), the education system is one of the areas that is still focused on old methods of learning. Again, in a study, Anna (2018) lamented that the traditional methods of teaching skills have not changed. This is why there is need for periodic changes in the approach to solving problems in order to remain relevant in every industry. The adherence to the traditional approach to problem-solving in design as was confirmed by KN Lecturer 1 who stated that students were not exposed to the use of design software during the creative stage of the ideation process.

If clients do not accept pencil sketches as participants stated during the interview session, how then can the design students meet the design needs of these clients as they cannot illustrate ideas in the vector software? The fact that the traditional pencil sketch of idea communication is no longer appreciated by today's clients is a clear signal that there is a need to change the modus operandi for design ideation to meet current expectations.

The Contribution of Digital Devices in Gathering Inspiration Materials

It was discovered in literature that inspiration is an essential part of idea development. As put by Cui (2020), inspiration plays a pivotal role in the creative process as it predicts creativity, serves a transmission function, promotes productivity, and complements the exertion of effort. All the participants confirmed that they depended on the internet for design inspiration. Unlike the wide sources of design inspirations discussed in literature (Laing & Masoodian, 2015: 1201), such as, printed material like magazines, photographs and books, electronic sources and website links and other physical material such as toys, packaging, hand drawings, and sketches and the multimodal sources of inspiration outlined by Tarja-Kaarina and Pirita (2014) such as artefacts from other domains, materials, images and works of art, objects and phenomena of nature and everyday life, greater number of the students depend heavily on the internet websites for inspiration. They usually do not explore the environment for inspiration. This notwithstanding, few participants engaged in multimodal sources of inspiration, which involved taking inspiration from objects and materials in the environment, artefacts from other domains, images, and phenomena of nature and everyday life.

It was observed that digital devices, especially smartphones helped students gather inspirational materials for their design works. Commenting on whether internet technology makes ideation easier or not the participants said:

> To me yes. Because there are lot of ideas out there. You can look on someone's work and get an inspiration. Even if you wouldn't do the same thing, you get an inspiration of how the work was done and you can do something. (Participant 3e)
>
> With the phone, we visit other designers, go through their works and take inspiration from there. (Participant 3a)
>
> Sometimes like when I walk around, maybe when I am at the beach and I see something that I get inspired with, I take photograph of it. Maybe I go round and I see an artwork, I snap it. As for the phone, it actually helps. (Participant 2b)

Participants 3e and 3a stated that they get inspired by the works of designers on the internet. Participant 3e is of the view that numerous ideas exist on the internet to inspire a designer to create ideas. Again, Participants 3a and 2b mentioned that they used the smartphone in gathering design inspirational materials. To Participant 2b, the smartphone is a very useful digital tool because it helps him capture works of art and images from the environment for design work. Creative ideas never seized from the environment. They exist in great quantities and in a variety of forms but it takes creativity to perceive them. Nature-inspired designs are usually varied, unique and wonderful. Designers who know how to explore nature very well will always produce creative works. While some artists will use small sketchpads for quick sketches as they explore the environment, majority of them will prefer devices such as digital cameras or smartphones. This is because the smartphone helps them get as many images as quickly as possible. The more the images, the more the ideas they are likely to generate.

Multi-functionality of Smartphones in Graphic Design Ideation

Mushroor et al. (2020) indicate that the smartphone is a great tool that allows people to access information on any imaginable topic instantly. These mobile smart devices also make individuals available anywhere, anytime, which changes the way that individuals choose to interact within and outside the society. It is observed that students make optimum use of this device as far as their academic issues are concerned. A small device though it is, the smartphone performs multiple tasks that are of great help to the designer.

Table 1. Multifunctionality of smartphone

Function	Description
Photograph	Design students take quality inspirational pictures using their smartphones.
Voice recording	The smartphone also helps students to do voice recording during lectures, group discussions or when conducting interviews as part of research.
Video recording	Students do video recording to keep record of some activities, processes or events that may be useful for design.
Note taking	The smartphone is used for note-taking.
Research	With internet connectivity, the smartphone is a perfect device for browsing for research purposes.
Drawing/ Sketches	There are smartphone applications for drawing that students use for drawing and sketching. These include Adobe Capture, Adobe Lightroom, Photoshop Fix, Adobe Comp, Canva and Adobe Spark. Others are Autodesk Sketchbook, Adobe Illustrator Draw and Procreate. These software can be of great help to designers. Most of the time the drawings done on smartphones are transferred to the computer for further improvement.
Designing	Some of the smartphone applications allow the graphic designer to complete everyday drawing tasks.
Sourcing for inspiration	The design students use smartphones to search for inspirational images during idea development.
Connecting computer to the internet	In instances where internet service is poor on campus, design students use their smartphone to connect internet to their computers by hotspot for browsing.
Scanning images	Applications such as Handy scanner, PDF scan or Microsoft Lens are used for perfect scanning of images and pencil sketches drawn during idea development

It is quite amazing to notice that all the participants depend on the smartphone, one way or another, during ideation. It is, indeed, a multi-purpose device that has come to make work simple for designers.

> The phone. Actually, we have Adobe software on it that can be used for design. (Participant 2b)

The statement of Participant 2b confirms the earlier discussion in this chapter about the use of smartphones and Adobe applications for graphic designing. According to Superprof (2023), applications such as Autodesk Sketchbook, Adobe Illustrator Draw and Procreate can be of great help to designers.

Impact of Digital Technology on the Variety, Novelty and Quantity of Ideas Developed

When a variety of ideas are generated in good quantity, it is most likely to obtain a novel idea. This means a successful final solution is likely to originate by exploring a variety of solution principles, as stated by Pahl et al. (2007). Literature established that the use of digital tools makes design work more convenient with good quality (Wang, 2020). Some excerpts below indicate the views of participants on the effect of digital devices on the quantity, variety and novelty of ideas.

> It makes work easier. With the digital device you can test the variation of colors. You can just mask and test different colors and you can do multiple works in one day. You can have more ideas than when you are using pencil and paper (Participant 2a)

> I have to generate more designs from other designers or look for more inspiration from other designers so I will search on the net to get more information or ideas from other people's work. Through that I can gather more ideas to add to mine to help me develop mine. (Participant 3b)

These two participants established the fact that digital devices help them to generate more ideas. The principal essence of design ideation is to create more ideas from which a solution may be selected. As stated by McGlashan (2018), it is important to generate many ideas at the ideation phases of design thinking by exploring several variations that result in a range of ideas from all perspectives. In support of this, Casakin et al. (2019) observed that the main objective of the design ideation stage is to explore as many ideas as possible from different and new perspectives. Technology, according to the participants, is helping them to achieve the essence of ideation.

As can be seen from the interviews, participants agreed that digital devices helped them in diverse ways. Participant 2a was of the view that the designer "can have more ideas than when you are using pencil and paper" and that the designer "can do multiple works in one day." Participant 3b shares a similar view when he said, "I can gather more ideas to add to mine to help me develop mine". He said he goes online to take inspirations from the works of others and by so doing he gains more ideas. This helps to achieve one of the purposes of ideation which is the development of ideas in good quantities.

Expressing more views about technology's impact in design ideation, participants said,

> With Pinterest and Instagram, there are a lot of people with different styles of design. I prefer to go through people who have vector type of designs. It inspires me. (Participant 3a)

> When you are given a design work you have to brainstorm, walk around the environment, pick inspiration and with the help of the digital gadget, you can just get to your phone and research what you want and pick an inspiration from the works that are already down there. So, they really help. (Participant 2c)

Participant 3a: mentioned that "I prefer to go through the work of people who have vector type of designs. It inspires me." This designer is particularly interested in the vector types of design and not the JPG or raster type simply because the vector form of drawing gives the designer the flexibility to reshape parts of it to achieve the desired outcomes.

A vector image has infinite resolution. There is virtually no limit on how big you can make a vector image without losing its resolution. In contrast, raster files only maintain their resolution when fitted to a specific size. The bigger they are stretched, the less the quality. With the vector file the designer can add shapes, different colors, and filters to create new and unique designs. This format allows the designer to combine graphic elements and text, which is particularly important when designing vector logos or printed materials. Again, the designer can easily go back and edit over and over again. This, in effect, helps the designers obtain multiple and variety of ideas. In their response regarding the importance of using the internet during design ideation, the participants said:

> … Like I mean design a poster on sustainability. You ask yourself what sustainability is about. And when you go to the internet and type sustainability you will see various kinds of designs on sustainability and it looks like but not necessary to copy. It gives you an inspiration to just do yours. Even the colors to choose. (Participant KN 3a)

> With the phone, we go on the internet, when you are given a topic and maybe you want a wide idea. You go to internet and search; you will get various and different types of ideas then you actually take one you will work on. (Participant 2b)

Participants KN 3a from the Traditional University and Participant 2b from the Technical University expressed the view that the internet helps them to get a variety of ideas for design ideation. While Participant KN 3a expressed this view by saying "You will see various kinds of designs", Participant 2b said, *"*You will get various and different types of ideas". This indicates that students visit the internet on purpose to obtain a wide spectrum of design ideas on a given design task. The participants' statement corroborates with that of Wang (2020) who indicates that the use of digital tools (one of which is the internet) makes design work more convenient with good quality and offers the user more choices and variety. A variety of ideas is important in design ideation because it is what qualifies a design to be counted. As stated by Pahl et al (2007), the ideation stage is very important because a successful final solution is likely to originate by exploring a variety of solution principles. The extent to which the ideas vary (variety) in quantity determines the quality and the novelty of ideas. The more the quantity of varied ideas, the more the quality and novelty to be produced. Generating varieties of design ideas constitutes one of the major creative responsibilities of the designer during the ideation and the digital technologies, according to the respondents, help in achieving that.

CONCLUSION

This study sought to identify the digital tools used in graphic design ideation among Ghanaian graphic design students and their impact on ideation outcomes. It was discovered that students used laptops, digital cameras,

styluses, tablets, and smartphones for design ideation, but they predominantly used laptops in combination with smartphones for this purpose. Their design software includes CorelDraw, Adobe Photoshop, Adobe Illustrator, Adobe InDesign, Adobe Capture, and Adobe Lightroom. The internet also emerged as a very important digital tool that promotes effective design ideation, without which the designer may not be able to achieve much. In effect, the technology adopted by designers is the use of digital devices, design software and the internet for design ideation.

It is clear from the discussions that digital technology helps designers to generate variety of ideas by gathering inspirational materials to guide the design ideation process. Again, because of the multitudes of ideas gathered from the various websites, the designers were able to generate good quantities of ideas in answering design briefs and this helps in achieving novelty of design. This supports Pahl et al.'s (2007) assertion that exploring a variety of solution principles lead to a successful final solution.

Even though the impact of digital technology is notable and all the participants admitted that they used digital technology for design research and idea exploration by visiting the design websites for design inspirations, less than half of them (ten out of twenty-four) knows how to use vector software such as CorelDraw and Adobe Illustrator for actual digital idea illustration. This is a concern that needs to be addressed as today's clients do not accept pencil illustrated ideas. One of the ways to improve student's digital illustration is by exposing them to and engaging them with vector software in the design process. The more one learns about the abilities of technology, the more creative one becomes (Thangarajathi, 2020: 864). Thus, constant use of design software will help students develop the fluency required to be creative in digital ideation.

Authors' Contributions

Both authors made an equal contribution to the study.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

Ethics committee approval dated 10.11.2022 and numbered 117/22 was obtained for the study from Durban University of Technology, South Africa.

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Review Article

Üç boyutlu yazıcıların cam ürün tasarımında kullanılabilirliğin incelenmesi

Investigation of the usability of three-dimensional printers in glass product design

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Özet

Cam, şekillendirilmesi oldukça zor ve maliyetli bir malzemedir. Özellikle geleneksel yöntemler kullanılarak elde şekillendirilen cam, bazı formların oluşturulmasında zorlayıcı olabilmekte, bu durum da camı şekillendiren kişiyi tasarım ve uygulama yönünden sınırlandırabilmektedir. Ancak son zamanlarda araştırmaları ve denemeleri yapılan üç boyutlu cam yazıcıların, gelecekte cam alanında çalışanlar için de alternatif bir şekillendirme yöntemi sunacağı aşikârdır. Bunun sonucunda, cam alanında yapılan araştırma ve çalışmaların hangi aşamada olduğunu analiz etmek ve gelişime yön verebilmek için bu araştırmaya ihtiyaç doğmuştur. Dolayısıyla çalışmanın amacı, cam alanında kullanılan uygulama yöntemlerindeki değişimleri göz önünde bulundurarak, üç boyut yazıcıların cam ürün tasarımında kullanılabilirliğini araştırmaktır. Bu bağlamda çalışmanın araştırılmasında, nitel veri toplama yöntemleri olan gözlem ve doküman analizi kullanılarak üç boyutlu yazıcılar hakkında bilgi elde edilmiştir. Akademik yazılı kaynaklar, internet kaynakları ve çalışmalar incelenerek üç boyutlu yazıcılar ve uygulama çeşitlilikleri hakkında bilgi edinilmiştir. Ayrıca, bu teknoloji ile cam ürün denemeleri yapan özel firmaların ürün üretim süreçleri ve sonuçları incelenerek teknolojinin avantajları ve dezavantajları belirlenmiştir. Çalışmanın sonucunda, üç boyutlu yazıcıların camın şekillendirilmesinde kullanılabilirliği değerlendirilmiş ve bu teknolojiyle üretilen cam nesnelerin henüz prototip aşamasında olduğu gözlenmiştir. Ancak geleneksel yöntemlerle şekillendirilmesi zor olan cam formların, gelişim sürecindeki bu yeni üretim yöntemiyle, gelecekte daha kolay üretilebileceği ve tasarım alanına da adapte edilebileceği görülmüştür.

Anahtar Kelimeler: Cam, Üç boyutlu yazıcı, Cam ürün tasarımı, Cam şekillendirme teknikleri

Abstract

Glass, is a very difficult and costly material to shape. Especially glass shaped by hand using traditional methods can be challenging in the creation of some forms, which can limit the glass shaper in terms of design and application. However, it is obvious that three-dimensional glass printers, which have been researched and tested recently, will offer an alternative shaping method for those working in the field of glass in the future. As a result, there is a need for this research in order to analyze the stage of research and studies in the field of glass and to give direction to the development. This research aims to assess the usability of 3D printers in glass product design, considering evolving application methods. Data on 3D printers and their diversity were collected through observation, document analysis, academic sources, and studies. The technology's pros and cons were examined through product production processes and results of private companies experimenting with it. Findings show that while glass objects produced with 3D printers are still in prototype stages, they offer potential for easier production of complex forms compared to traditional methods, promising advancements in glass design.

Keywords: Glass, Three-dimensional printer, Glass product design, Glass forming techniques

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Extended Abstract

Introduction: Technological developments have profoundly affected and changed the design field, as in many other fields, and new means of expression, production techniques, and materials have begun to be used. Recently, three-dimensional printer technologies have increased production speed and shaped difficult forms more easily. These three-dimensional printers, one of computer-aided production methods, find a place for themselves with various materials in the design fields and the industry. This technology, which uses many different materials such as polymers, metals, and ceramics, has recently emerged as a very effective tool in creating three-dimensional and concrete forms of glass objects. This new production method, which is still in the development stage, has a very important place in terms of facilitating some of the difficulties encountered in traditional production and accelerating production. In this study, existing three-dimensional glass printers are examined in line with the information obtained in the literature reviews and their usability in the fields of glass product design is examined and evaluated.

Purpose and scope: Recently, three-dimensional printing technologies have been utilized to increase production speed and to produce difficult-to-shape forms more easily. These technologies are accepted as a powerful detailing method, are used in many different sectors and greatly facilitate production processes. Therefore, in the world of three-dimensional printing, an area of intense competition, production is now realized using many different materials. This additive manufacturing method, mainly used for polymers, has also enabled the production of materials such as metals, ceramics and recently glass. This new production method, which is still in the process of development, has a very important place in terms of facilitating some of the difficulties encountered in traditional glass production and accelerating production. Therefore, research and studies are needed in order to fully utilize this potential in the field of glass product design and guide its development. Therefore, the aim of this study is to analyze the state of research on glass production with three-dimensional printers and to investigate the usability of this technology in glass product design. In this way, new possibilities in glass production can be explored and complex glass forms can be produced more easily and precisely. In addition, more efficient and innovative solutions can be developed in glass product design and the boundaries of creativity in design fields can be expanded.

Method: Three-dimensional printers are a technology that allows three-dimensional objects to be created in layers. It has been observed that this technology is still being developed in the production of glass objects, and the resulting glass objects are prototype products. Therefore, in order to fully utilize this potential, the need for this research has arisen in order to determine the stage of research and studies carried out in this field so far and to give direction to the development. In this study, which aims to examine the usability of three-dimensional printers in glass product design, a qualitative research method was used. A research and evaluation-based study method was applied within the framework of qualitative data collection methods such as observation and document analysis. In this context, a broad literature review was conducted at the beginning of the research; relevant written sources and studies were examined.

Findings and conclusion: Today, 3D printing technologies are seen as a combination of technology and design. This technology is no longer just a matter of mathematical calculations, software engineering or mechanical engineering; it is a joint product of mechanics, design and software. In this research, all three-dimensional printers published to date have been investigated and the examples found have been evaluated in order to obtain new information about material-based digital production in relation to the creation of new glass forms and designs. Three-dimensional printers, which are designed as a digital production method for industrial use, have recently entered the process of developing a sectoral R&D infrastructure by including glass material in the production process, and it has been observed that glass objects produced with three-dimensional printers are still in the prototype stage. Many engineers and companies working in this field have produced projects by working to develop this technology and continue their research. As a result of the research, it was seen that three-dimensional printers that produce glass have different working principles. Each company used different production methods as a result of the studies and trials they carried out within their own organization. However, it has been observed that all these methods vary in terms of usage areas and each has its own advantages and disadvantages. Thanks to the changing production methods, their products are quite different in size, structure, and appearance. While some printers produced micro-structured products, others produced forms with large and layered walls. Some of the products are transparent while others are opaque. However, although the speed of production and the outputs are insufficient, it is obvious that the future will be a technological glass-shaping method. Thanks to this developed infrastructure, it is seen that this technology can be adapted to the field of glass product design in the future. Moreover, it can be evaluated as an alternative shaping method and will be able to produce very successful results in the creation of forms that are difficult to shape by hand. For this reason, in line with the studies and research carried out, this three-dimensional printer technology will make great contributions to the field of design; beyond being just a production method, it will also offer a design philosophy and even a new way of life.

Keywords: Glass, Three-dimensional printer, Glass product design, Glass forming techniques

GİRİŞ

Teknolojideki gelişmeler birçok alanda olduğu gibi tasarım alanını da derinden etkileyerek değiştirmiş ve yeni ifade araçları, üretim teknikleri ve malzemelerin kullanılmasına olanak sağlamıştır. Aynı zamanda bu değişim, tasarımcıların yaratıcılığını genişletmiş ve yeni keşiflere öncülük etmiştir. Günümüzde üretim hızını artırmak ve zor formları daha kolay şekillendirmek için üç boyutlu yazıcı teknolojileri kullanılmaktadır. Bilgisayar destekli üretim yöntemlerinden biri olan bu üç boyutlu yazıcılar, endüstriyel alanda olduğu kadar tasarım sahalarında da çeşitli malzemelerle kendilerine yer bulmaktadır. Polimer, metal ve seramik gibi birçok farklı malzeme kullanılarak üretim yapılmasını sağlayan bu teknoloji, son yıllarda cam objelerin üç boyutlu ve somut formlarının oluşturulmasında oldukça etkili bir araç olarak görülmektedir. Özellikle üretimden önce tasarımın değerlendirilmesinde ve prototipin hazırlanmasında tercih edilen bu teknoloji sayesinde artık cam malzemeyi de kullanarak bilgisayar destekli ve dijital yöntemlerle üç boyutlu cam obje üretimi yapabilme çabasına girilmiştir. Bilim insanları da cam işlemeciliğinin dezavantajlı yanlarının üç boyutlu yazıcı tekniğiyle aşılıp aşılamayacağını araştırmışlardır. Çünkü cam yapımı, zorlukları olan bir zanaattır. Geleneksel olarak zanaatkârlık; alet, malzeme ve zanaatkârın becerileri arasındaki etkileşim olarak anlaşılır. Zanaatkâr, camı şekillendirme sırasında özel aletlerin ve kişisel becerilerin karmaşık bir etkileşimini koordine ederek kısa sürede malzemeye şekil verir. Buna karşılık dijital tasarım ortamları, cam alanındaki bireysel deneyim ve beceri gerektiren uzun üretim süreçlerini daha kısa sürede sonuçlandıracak hale getirir olmuştur. Üç boyutlu baskı, en geometrik karmaşık formların bile tasarımında ve üretiminde eşi benzeri görülmemiş bir özgürlük sağlamaktadır. Bu ikilem, zanaatkârlığın yalnızca yetenekli el işçiliği olarak anlaşıldığı fikrine dayanmaktadır. Ancak Ancak Richard Sennett The Craftsman adlı kitabında bu kavramı genişletir ve hem zanaatı hem de bilgisayar programcılığını kendi iyiliği için ya da bir işi iyi yapmak adına bir insan dürtüsü olarak ifade eder (Sennett'den aktaran Klein, 2018: 336). Nasıl ki tuvali boyarken fırça kullanılıyorsa ya da çamur veya cam şekillendirilirken araç ve gereçlerden faydalanılıyorsa, üç boyutlu yazıcılar da camı şekillendiren birer üretim araçları görevi görmektedir. Üç boyutlu yazıcılar tasarımcının ünvanını, yeteneğini ya da tasarım vizyonunu zayıflatmaz, aksine tasarımcının duygularına ve yaratmak istediği formu oluşturmasına yardımcı olacak bir araç rolünü üstlenir. Gelişim süreci devam eden bu yeni üretim şekli geleneksel üretimde karşılaşılacak bazı zorlukları kolaylaştırması ve üretimi hızlandırması açısından oldukça önemli bir yere sahiptir. Dolayısıyla bu çalışmanın, tasarımcıların ve üreticilerin cam malzemesiyle gerçekleştirdikleri tasarımlarda yeni yaklaşımlar denemelerine ve inovatif araçları kullanmalarına yardımcı olabileceği, ayrıca literatürdeki eksiklikleri gidererek araştırmacılara yeni çalışma alanları sunabileceği öngörülmektedir.

Bu bağlamda, çalışmanın amacı, gelişim aşamasındaki üç boyutlu cam yazıcıların ürün tasarımı alanında kullanılabilirliğinin detaylı bir şekilde incelenerek cam endüstrisindeki kullanım potansiyelini analiz etmek ve bu teknolojinin avantajlarını ve sınırlılıklarını belirlemektir. Çalışma kapsamında ise; ilk olarak geleneksel cam şekillendirme yöntemleriyle şekillenen tasarımlara yer verilmiştir. Daha sonra incelenen mevcut literatür, makale ve kaynaklar ışığında, cam malzemeyi kullanan üç boyutlu yazıcılar, uygulama çeşitliliklerine göre kategorize edilmiştir. Gelişim sürecindeki bu teknolojiyle camın nasıl şekillendirildiğine ve bu alanda faaliyet gösteren araştırmacıların da ortaya koyduğu örnek çalışmalara yer verilmiştir.

YÖNTEM

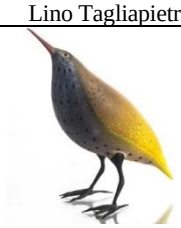
Üç boyutlu yazıcılar, üç boyutlu nesnelerin katmanlar halinde oluşturulmasını sağlayan bir teknolojidir. Bu teknolojinin cam obje üretiminde henüz gelişim sürecinde olduğu ve ortaya çıkan cam nesnelerin de birer prototip ürün oldukları gözlenmiştir. Dolayısıyla bu potansiyelin tam olarak değerlendirilmesi için bugüne dek bu alana yönelik yapılan araştırma ve çalışmaların ne aşamada olduğunu tespit etmek ve gelişime yön vermek açısından bu araştırmanın yapılması ihtiyacı doğmuştur. Üç boyutlu yazıcıların cam ürün tasarımında kullanılabilirliğini inceleme amacını taşıyan bu çalışmada nitel araştırma yöntemi kullanılmıştır. Nitel araştırma yöntemi "gözlem, görüşme ve doküman analizi gibi nitel veri toplama yöntemlerinin kullanıldığı, algıların ve olayların doğal ortamda gerçekçi ve bütüncül bir biçimde ortaya konmasına yönelik nitel bir sürecin izlendiği araştırma olarak tanımlanabilir" (Yıldırım & Şimşek, 2018: 41). Çalışma kapsamında da gözlem ve doküman analizi gibi nitel veri toplama yöntemleri çerçevesinde araştırma ve değerlendirme temelli bir çalışma yöntemi uygulanmıştır. Bu bağlamda; üç boyutlu yazıcılar hakkında bilgiler elde etmek amacıyla

akademik yazılı kaynaklar, internet kaynakları ve çalışmalar incelenmiştir. Üç boyutlu yazıcılar ve uygulama çeşitlilikleri hakkında bilgi literatür çalışmalarıyla elde edilmiştir. Üç boyutlu yazıcı ile cam ürün denemeleri yapan özel firmaların ürün üretim basamakları ve ortaya çıkan sonuçlar incelenerek teknolojinin avantajları ve dezavantajları hakkında bilgi edinilmiştir.

BULGULAR

Cam, esas olarak eşsiz optik şeffaflığı, üstün mekanik, kimyasal ve termal direnci ve ayrıca termal ve elektriksel yalıtım özellikleri nedeniyle, endüstride ve toplumda bilimsel araştırmalarda kullanılan en önemli yüksek performanslı malzemelerden biridir. Bulunuşundan itibaren endüstride olduğu kadar sanat ve tasarım alanında da önemli bir malzeme olan cam, yüksek sıcaklıklarda şekillendirilmektedir. Farklı ısılarda değişkenlik gösteren yapısı nedeniyle de biçimlendirme teknikleri açısından farklı kriterlere göre sınıflandırılmıştır. Dolayısıyla geleneksel cam şekillendirme yöntemleri dört ana gruba ayrılmaktadır. Bunlar; fırında biçimlendirme yöntemleri, sıcak cam yöntemleri, açık alevde biçimlendirme ve soğuk cam biçimlendirmedir (Tablo 1). Ancak "cam şekillendirme yöntemleri tek başına kullanılabildiği gibi, farklı yöntemler peş peşe bir arada kullanılabilmektedir. Dolayısıyla ana bir yöntem sürecinin içinde araya giren fiziksel ve görsel farklılıklar yaratan teknikler de bulunmaktadır" (Küçükbiçmen, 2015: 24).

Tablo 1. Geleneksel cam şekillendirme yöntemlerine ait örnekler

Fırında Biçimlendirme Yöntemleri	 Kalıpta şekillendirme	 Chantal Royant
Sıcak Cam Yöntemleri	 Sıcak cam şekillendirme	 Lino Tagliapietra
Açık Alevde Biçimlendirme	 Alevle şekillendirme	 Shane Ferro
Soğuk Cam Biçimlendirme	 Soğuk cam şekillendirme	 Vladimir Klein

Üç Boyutlu Yazıcılar ve Uygulama Çeşitlilikleri

Son dönemlerde üretim hızını arttırmak ve şekillendirilmesi zor formları daha kolay üretebilmek amacıyla üç boyutlu yazıcı teknolojilerinden faydalanıldığı görülmektedir. Bu sayede, katmanlı üretim veya üç boyutlu baskı, malzeme biliminde güçlü bir detaylandırma yöntemi olarak kanıtlanmış ve artık rekabetin yoğun

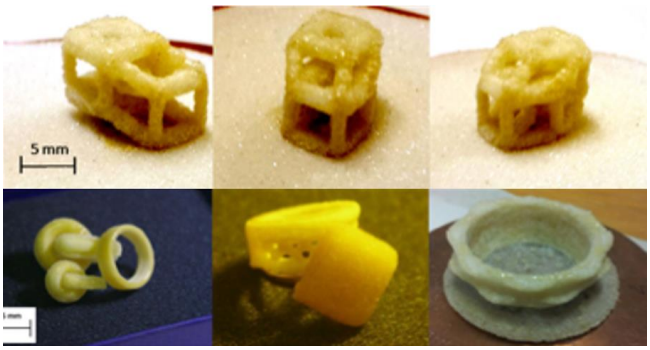
yaşandığı bir alan olan üç boyutlu yazıcı dünyasında birçok farklı malzeme kullanılarak üretim gerçekleştirilebilmektedir. Ağırlıklı olarak polimerler için kullanılan katmanlı imalat, metallere, seramiğe ve oldukça yakın zamanda da cam malzemeye kadar uzanmıştır.

Katmanlı üretim (AM) veya üç boyutlu baskı 30 yıldan fazla bir süre önce icat edilmiş ancak son on yılda hızlı prototiplemeden AM'nin endüstriyel uygulaması olarak tanımlanan hızlı üretime (RM) yayılmıştır. Bu değişim, gelişmiş makine ve malzeme geliştiren mühendisler ve bilim adamlarından, ileri düzeyde bilgi edinen ve yeni uygulamalar uygulayan tasarımcılara ve sanatçılara kadar disiplinler arası ortak bir çabayla sağlanmıştır (Lizardo, 2018: 19). Üç boyutlu baskı, 21. yüzyılın üretim devrimidir. Eser üretme, çoğaltma ve yayma yeteneği ile insanlık tarihini önemli ölçüde değiştirmiştir. Matbaanın bilgileri paylaşmasına, dağıtmasına ve arşivlemesine olanak sağlaması gibi, üç boyutlu baskı da internet üzerinden dijital tasarımlardan nesnelerin paylaşılmasını, üretilmesini ve hatta tasarım hatalarının üretim aşamasından önce tespit edilerek giderilmesini mümkün kılmaktadır (Kotz vd., 2018a: 1). Camın üç boyutlu yazıcılar ile işlenebilmesi ise oldukça yakın bir zamana tarihlenmektedir. Günümüzde bu alanda çalışan birçok mühendis ve firma, araştırmalarını hala sürdürmekte ve teknolojiyi geliştirmek adına çalışmalar yaparak projeler üretmektedir. Yapılan araştırma sonucunda ise her firmanın kendi bünyesinde gerçekleştirdikleri çalışmalar ve denemeler sonucunda farklı üretim yöntemlerini kullandıkları gözlenmiştir. Şimdiye dek üç boyutlu yazıcılar ile camı şekillendirmede kullanılan bu yöntemler, üretimde kullanılan malzeme ve uygulama çeşitliliklerine göre dört ana grup altında toplanabilir. Bunlar;

1. Toz Malzemenin Sinterlenmesi: Seçici Lazer Sinterleme (Selective Laser Sintering-SLS), Lazer ile Ergitme (Selective Laser Melting – SLM)
2. Sıvı Malzemenin Lazer ile Kürlenmesi: Stereolitografi (Stereolithography-SLA), Mikro Stereolitografi (Micro Stereolithography), Dijital Işık İşlemi (Digital Light Processing- DLP)
3. Doğrudan Mürekkeple Yazma (Direct Ink Writing-DIW)
4. Katı Malzemenin Eritilerek Yığılması: Eriyik Yığma Yöntemi (Fused Deposition Modeling- FDM) şeklindedir (Altunkaynak, 2020).

Toz Malzemenin Sinterlenmesi: Seçici Lazer Sinterleme (Selective Laser Sintering-SLS), Lazer ile Ergitme (Selective Laser Melting – SLM)

Cam, eşsiz optik mekanik, termal ve kimyasal stabilite gibi sayısız avantajlı özelliğe sahiptir. Bu özellikleri nedeniyle cam bazlı malzemeler, üç boyutlu baskı alanında özel bir değer sağlama potansiyeline sahiptir. Yüksek erime sıcaklıklarının ve yüksek viskozitelerinin üstesinden gelmek için cam malzemelere bağlayıcı püskürtme yaklaşımları uygulanmıştır (Klein vd., 2015: 93). Ancak mürekkep püskürtmeli baskı, borosilikat cam tozlarının seçici lazer sinterlenmesi (SLS) veya soda-kireç cam tozunun SLM'si gibi yaklaşımlar şimdiye kadar sadece gözenekli beyaz ve şeffaf olmayan cam bileşenlere yol açmıştır (Görsel 1) (Kotz vd., 2018a: 1). Bu yöntemde basılan sinterlenmiş cam nesneler ticari olarak mevcuttur, ancak bunlar son derece kırılgandır ve eksik yoğunlaştırmanın neden olduğu cam tozlarından kaynaklanan ışık saçılması nedeniyle opak görünmektedirler (Klein vd., 2015: 93).



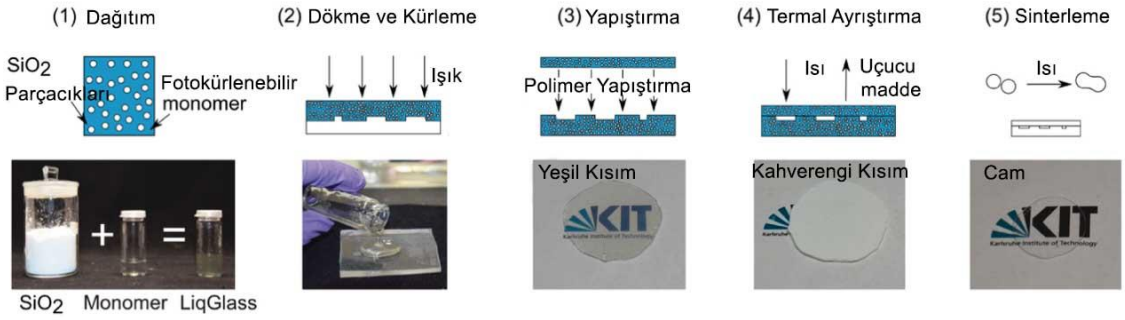
Görsel 1. SLM işlemi kullanılarak üretilen çeşitli nesneler

Sinterlenmiş cam tozu ile üç boyutlu baskının ilk örnekleri, malzemeye değer verilen şeffaflık ve mekanik özelliklerden yoksundur, ancak daha düşük maliyetle karmaşık geometriye sahip bir cam üretim sürecini

sanayileştirmek için ciddi girişimleri temsil etmektedir. Son yıllarda cam baskı için yeni yöntemler ortaya çıkmıştır. Bu yeni yöntemler de mevcut tasarım ve ürünleri önemli ölçüde değiştirerek; geometrik karmaşıklığa, optik şeffaflığa ve mekanik mukavemetin güvenilirliğine sahip nesnelerin yaratılmasına katkı sağlamıştır (Lizardo, 2018: 19).

Sıvı Malzemenin Lazer ile Kürlenmesi: Stereolitografi (Stereolithography-SLA), Mikro Stereolitografi (Micro Stereolithography), Dijital Işık Yöntemi (Digital Light Processing- DLP)

Almanya'nın Eggenstein-Leopoldshafen kentindeki Karlsruhe Teknoloji Enstitüsü'nden makine mühendisi Bastian Rapp ve ekibi, 2016 yılında güçlü ve saydam cam nesneler üretebilen üç boyutlu baskı teknolojisi üzerinde çalışmalara başlamış ve ilk tekniklerini o dönemde geliştirmiştir. LiqGlass (Sıvı Cam) ismini verdikleri bu teknik, üç boyutlu yazıcılar ile karmaşık cam yapılar imal edilebilmesini mümkün kılmıştır. LiqGlass, yumuşak çoğaltma kalıpları kullanılarak yapılandırılabilen, termal ayırma ve sinterleme yoluyla cama dönüştürülebilen, ışıkla sertleşen amorf silika nanokompozittir. Teknik, stereolitografi adı verilen geleneksel bir üç boyutlu yazıcı yöntemini kullanmaktadır. Rapp, bu tekniğin modern üç boyutlu yazıcının önemli bir boşluğunu kapattığını dile getirmiştir. Bilim insanları bu tekniği geliştirmek için cam yapımında kullanılan silis parçacıklarından faydalanmışlardır. Bu parçacıklar 40 nanometre genişliğindeyken, standart bir insan saç telinden 2500 kat daha ince durumdadır. LiqGlass ismi verilen maddenin üretimi için silika nanoparçacıklar bir akrilik çözeltiye eklenmiştir. İmal edilen LiqGlass, üç boyutlu yazıcı materyali olarak kullanılmış ve ultraviyole ışınlarıyla akrilik cama benzer bir şekilde sertleştirilmiştir. Sertleştikten sonra plastik parçalar yaklaşık 1300°C sıcaklığa maruz kaldığında erirken, nano silis parçacıkları ise pürüzsüz şekilde birbirlerine kaynaşmıştır (Görsel 2). Sonuç olarak LiqGlass bileşeni, termal ayırma ve sinterleme yoluyla yoğun, yüksek kaliteli bir cama dönüştürülmüştür. Elde edilen bu mikro yapıdaki cam bileşeni, ticari olarak eritilmiş silika cam ile kimyasal ve fiziksel olarak aynıdır (Kotz vd., 2016: 4646).

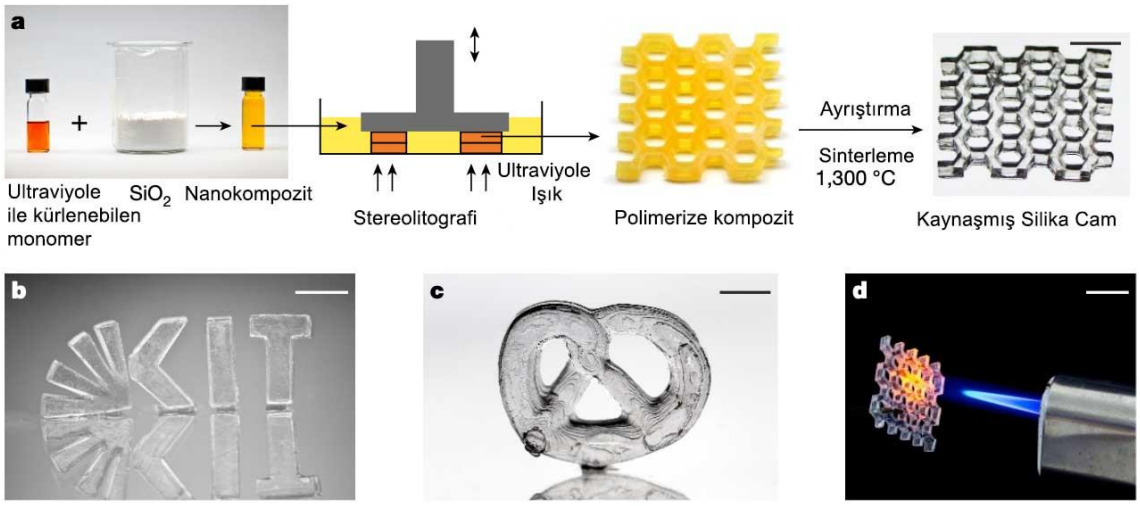


Görsel 2. Liqglass üretim sürecinin iş akışının şeması

"LiqGlass, temiz oda tesisleri veya tehlikeli kimyasallar gerektirmeden cam mikro yapıların düşük maliyetle prototiplenmesine yönelik bir adımdır. Tüm imalat süreci ise 61 saat içinde yapılabilmiştir" (Kotz vd., 2016: 4647). Bu yeni yöntem ile kamera lensleri gibi alanlarda kullanılabilecek kadar pürüzsüz ve berrak cam bileşenler üretilebilmektedir. Rapp, "akıllı telefonlar için minik lenslerin yanı sıra kimyasal reaksiyonların gerçekleşebileceği camdan yapılmış, kimyasal ve termal olarak dayanıklı mikro reaktörler üretebiliriz" demektedir. Geliştirilen yeni teknik, yüksek hızda veri iletimi için optik ve fotonik bileşenlerin oluşturulmasına da yardımcı olabilmektedir. Bu sayede üç boyutlu yazıcılar karmaşık cam yapılar imal edilebilmesini mümkün kılmaktadır.

Camın yapılandırılması zordur ve genellikle bir cam eriyiğini şekillendirmek için yüksek sıcaklıklar veya mikro yapıların aşındırılması için bazı tehlikeli kimyasallar gerektirmektedir (Glassomer, 2022). Ancak nanokompozitler, uygun maliyetli masaüstü stereolitografi yazıcılarında işlenebilir ve üç boyutlu cam bileşenlerin katman katman oluşturulmasına izin verir (Kotz vd., 2017: 338). Rapp ve ekibi bir sonraki araştırmalarında stereolitografi ve mikrostereolitografi kullanılarak üç boyutlu olarak basılabilen yeni silika nanokompozitleri geliştirmiştir. Elde edilen polimerik nanokompozitler, termal ayırma ve sinterleme yoluyla yüksek kaliteli erimiş silika cama dönüştürülmüştür (Görsel 3). Artık erimiş silika cam, stereolitografi baskısı kullanılarak yapılandırılabilirken, mikrostereolitografi kullanılarak da onlarca mikron çözünürlüğe ve birkaç nanometre pürüzlülüğe sahip yüzeyler basılabilmektedir (Kotz vd., 2018a: 5). Ayrıca bazı metal tuzlarını

ekleyerek renkli cam baskılar alınabileceğini de keşfetmişlerdir. Örneğin Krom (III) nitrat Cr (NO3) 3 yeşil renkli cam, Vanadyum (III) klorür (VCI3) mavi renkli bir cam olarak sonuçlanmıştır (Kotz vd., 2017: 339).

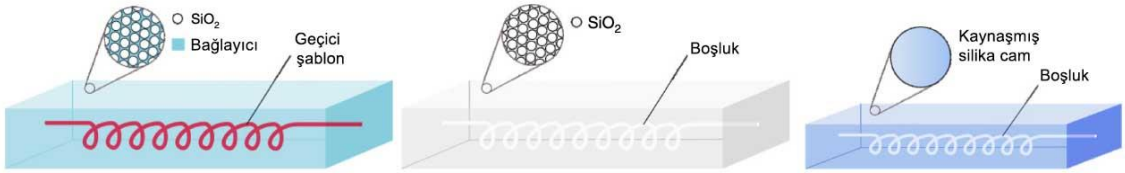


Görsel 3. (a) Erimiş silika camın üç boyutlu baskısı, (b-c) sinterlenmiş cam yapı örnekleri ve (d) baskılı erimiş silika camın yüksek termal direncinin gösterilmesi

Ekibin yaptıkları araştırmaların devamında ise "Glassomer" adı verdikleri sıvı ve katı bir nanokompozit geliştirmişler ve bu nanokompozitlerin de yaygın standart polimerler gibi yapılandırılabileceğini göstermişlerdir. "Sıvı Glassomer (örneğin Glassomer L50), oda sıcaklığında çoğaltma veya stereolitografi üç boyutlu baskı ile yapılandırılabilir. Katı bir Glassomer ise delme, yontma, kazıma veya basitçe bir bıçakla oyma gibi klasik aşındırma yöntemleri kullanılarak yapılandırılabilir" (Glassomer, 2022). Glassomer işlendikten sonra 600 °C'de termal ayrıştırma yapılır ve daha sonra 1300 °C'de sinterlenerek yüksek kaliteli erimiş silika cama dönüştürülür (Görsel 4). Elde edilen cam, ticari olarak eritilmiş silika ile aynı optik şeffaflığa ve pürüzsüz bir yüzeye sahiptir. Bu çalışma, yüksek performanslı erimiş silika cam bileşenlerini yüksek verimli üretim teknolojileri için erişilebilir hale getirmekte ve bilim ve endüstride sayısız optik, fotonik ve tıbbi uygulamayı mümkün kılmaktadır (Kotz vd., 2018b: 1).

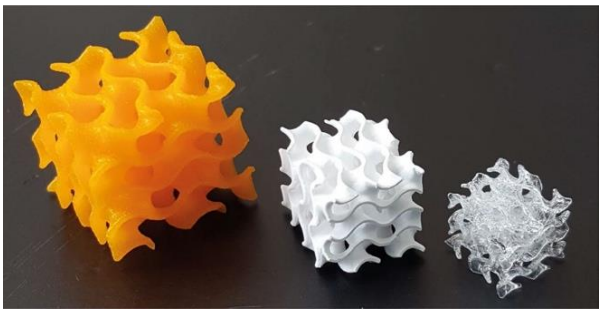
Görsel 4. Erimiş silika camın (katı glassomer) yontularak işlenmesi

Aynı ekibin bu teknoloji üzerine yaptığı son araştırmasında da yüksek hassasiyet ve üç boyutlu tasarım özgürlüğü ile erimiş silika camda içi boş mikro yapıların oluşturulması için bir yaklaşım sunmuşlar ve oda sıcaklığında erimiş silika bileşenlerini yapılandırmak için bir yöntem geliştirmişlerdir. Bu işlemde, polimerik filamentler, amorf bir silika nanokompozit içine gömülür. Nanokompozit daha sonra ışığa maruz bırakılarak polimerize edilir. Polimerize edilmiş nanokompozit, termal ayırma ve sinterleme yoluyla erimiş silika cama dönüştürülür. Polimerik şablon, termal ayrılma işlemi sırasında çıkarılır ve uygun boşluklar sağlanır (Görsel 5) (Kotz vd., 2019: 3).



Görsel 5. Erimiş silika camda içi boş mikro yapıların imalatı

David G. Moore ve ekibi ise 2020 yılında yaptıkları bir araştırmada faz ayırıcı reçineler kullanılarak çok bileşenli camların üç boyutlu baskısını sunmuşlardır (Görsel 6) (Okumuş, 2022). Burada, bir masaüstü dijital ışık işleme (DLP) yazıcı kullanarak yüksek çözünürlüklü ve çok oksitli kimyasal bileşimlere sahip karmaşık şekilli camlar oluşturmak için hibrit sıvı reçinelerin faz ayrımına dayanan basit bir üç boyutlu yazdırma işlemini gerçekleştirmiştir (Moore vd., 2020: 212). DLP üç boyutlu yazıcıların çalışma prensibi SLA üç boyutlu yazıcı ile çok benzerdir. Ancak temel bir farkı ise baskı işlemi için kullanılan ışık kaynağıdır. "SLA üç boyutlu yazıcıda ışık kaynağı lazer iken DLP üç boyutlu yazıcıda ışık kaynağı dijital ışık projektörü kullanmaktadır" (Dağ, 2020).

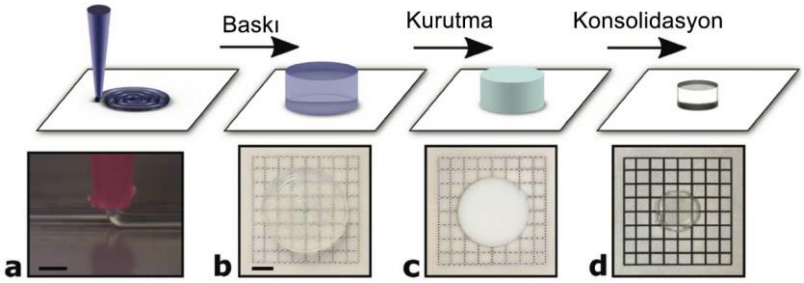


Görsel 6. Karmaşık şekilli bir nesnenin DLP üç boyutlu baskı sürecindeki farklı aşamaları

Bu çalışmada gösterilen üç boyutlu baskı platformu, geleneksel olarak el emeği ile elde edilen cam formun kontrolünü ve modern dijital üretim süreçlerinin sunduğu yüksek düzeydeki otomasyonu birleştirmeye yönelik bir adımdır. Sonucunda da bu üç boyutlu baskı platformunun farklı teknoloji, bilim ve sanat alanında yararlı olabileceği kaydedilmiştir (Moore vd., 2020: 212).

Doğrudan Mürekkeple Yazma (Direct Ink Writing- DIW)

Nguyen vd. (2017), yayınladıkları bir makalede, milimetre altı özelliklere sahip optik şeffaf cam yapıların üç boyutlu baskısı için iki parçalı bir süreç (şekillendirme ve sinterleme) kullanan doğrudan mürekkeple yazma (DIW) yöntemini geliştirdiklerini sunmuşlardır. Doğrudan mürekkeple yazma (DIW), eklemeli imalat (AM) yöntemiyle bilgisayar kontrollü üç boyutlu şekiller oluşturmaktadır (Görsel 7) (Hao vd., 2021: 665).



Görsel 7. Doğrudan mürekkeple yazma (DIW) yöntem ile üç boyutlu cam baskı işlemi

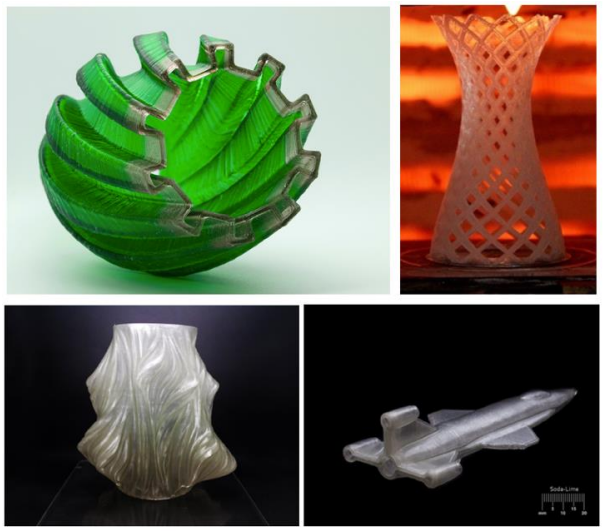
Süreç ilk olarak, istenen şekle sahip silika yeşil gövdeleri (gözenekli, düşük yoğunluklu yapılar) oluşturmak için kolloidal silika süspansiyonlarının DIW baskısına dayanır. Jelleşme, buharlaşma veya sıcaklığa bağlı faz değişimi yoluyla hızla katılaşan bu özel mürekkepler bir nozülden ekstrüde edilerek katman katman şekillenir. Bu işlemin önemli bir özelliği, baskılı camın belirli uygulamaları için en uygun mürekkep özelliklerini elde etmek için akma gerilimini ve kesme incelmesini kontrol etme yeteneğidir. İkinci olarak, basılı yapılar kurutulur ve yeşil gövdenin tamamen yoğun, amorf, şeffaf katı bir yapıya sinterlenmesi için silikanın erime noktasının altındaki sıcaklıklara ısıtılır. Bu ısıtma işlemi üç aşamalı olarak gerçekleşir; öncelikle çözücüyü uzaklaştırmak için yeşil form, uygun koşullar altında (110 saat boyunca 100 °C'lik optimum kurutma programı ile) yapıyı bozmadan kurutulmalıdır. Çözücünün uzaklaştırılmasının ardından, kalan organik maddeleri de uzaklaştırmak için ısıl işlemin ikinci aşaması uygulanır ve sıcaklık 600 °C'ye yükseltilir. Kurutma ve yanma işlemi sırasında, basılı yapı hacimsel olarak ≈%43 oranında küçülerek yalnızca kimyasal olarak bağlı silika

tozundan oluşan yeşil bir gövde meydana gelir. Son olarak da bu yeşil gövde önceden ısıtılmış 1500°C'lik bir fırında 3 dakika yoğunlaştırılarak tamamen şeffaf bir cama dönüştürülür (Nguyen vd., 2017:3).

Katı Malzemenin Eritilerek Yığılması: Eriyik Yığma Yöntemi (Fused Deposition Modeling- FDM)

Üç boyutlu yazıcılar işleyiş biçimi açısından çoğunlukla yığma yöntemi olarak adlandırılan FDM (kaynaşmış biriktirme modellemesi) sistemini kullanmaktadır. Malzeme yığma şeklinde çıktı veren bu üç boyutlu yazıcılar, sıvılaştırılmış ya da plastik hale getirilmiş malzemeyi yazıcı başlığındaki bir ekstruder yardımıyla katmanlar halinde inşa etmektedir (Özgündoğdu, 2014: 6). Yakın zamandaki üç boyutlu cam baskı alanındaki gelişmeler de hem katı hem de erimiş besleme stoğu ile malzeme ekstrüzyonu gibi işlemleri içermektedir. Bazı üç boyutlu yazıcılar da bu yöntemi kullanarak eriyik haldeki camı katmanlar halinde yığarak inşa etmektedir. Bu yöntemi kullanarak üretim yapan şirketlerden birisi de İsrailli Micron3DP'dir ve yüksek çözünürlüklü cam basan üç boyutlu yazıcıyı tanıtan ilk şirkettir. "Bu şirket, ince katman kalınlığına sahip ayrıntılı cam nesneleri oluşturmak için çubuk bazlı bir malzeme besleme stoğunu ve yüksek sıcaklık meme işlemini geliştirmiştir" (Lizardo, 2018: 20). Cam parçaların imalatında yeni bir yol geliştirmeye çalışan bu şirket 2015 yılının yaz aylarında erimiş camı üç boyutlu yazıcı ile şekillendirmenin bir yolunu bulduğunu duyurmuştur. Soda içerikli camı 850°C'de, borosilikat içerikli camı ise 1640°C'de baskılamayı başaran bu buluş, dünyadaki ilk örnektir. Micron 3DP şirketi bu buluşundan birkaç yıl sonra yüksek çözünürlüklü cam baskılayan üç boyutlu yazıcı haberi ile tekrar gündeme gelerek yazıcıyı dünyaya tanıtmıştır. FDM gibi bir işlem kullanan Micron3DP'nin bu üç boyutlu yazıcıları, 1000 derecenin üstünde sıcaklık mertebesine, 200x200x200 mm baskı hacmine ve yaklaşık 0,05 kg/saat'lik bir baskı hızına sahiptir. Ancak yazıcının "küçük filament boyutuna sahip olması, ışığın ürünün basılı duvarlarından geçerken dağılmasına ve ürünü daha yarı saydam hale getirmektedir" (Lizardo, 2018: 20).

Micron3DP şirketi 100 mikron kadar düşük bir tabaka kalınlığına sahip yüksek çözünürlüklü karmaşık cam parçaları basabilmektedir ve bu yeni teknolojiyi kullanmanın büyük potansiyelini görecek mühendislerden, tasarımcılardan, sanatçılardan ve diğer profesyonellerden gelen fikirlere de açık olduklarını dile getirmiştir (Mensley, 2017). Micron3DP Şirketi'nde üç boyutlu yazıcılar ile farklı formlarda cam çalışmalar üretilmiştir (Görsel 8).



Görsel 8. Micron3dp Ltd, İsrail

Aynı zamanda ABD'nin en ünlü araştırma merkezlerinden olan Massachusetts Teknoloji Enstitüsü (Massachusetts Institute of Technology)'nde geliştirilen yeni bir teknik sayesinde üç boyutlu yazıcılarda plastik yerine cam hammadde kullanılabilmektedir (Al Jazeera, 2015). MIT Medya Laboratuvarı'ndaki Mediated Matter grubu, Makine Mühendisliği Bölümü, MIT Cam Laboratuvarı ve Wyss Enstitüsü arasındaki iş birliğiyle, G3DP adlı yepyeni bir üç boyutlu yazıcı geliştirilmiştir. 2014'te geliştirilmiş ve 2015'te rapor edilmiş olan G3DP, erimiş malzeme stoğunu kullanır ve ısıtılmış bir nozülden çok daha büyük filamentleri ekstrüde etmesiyle de daha şeffaflık sağlayan bir yöntem sunar. Cam baskı yapan bu üç boyutlu yazıcının platformu, 2,2 kg/saat biriktirme hızına, 250x250x300mm'lik hazne boyutlarına (Lizardo, 2018: 20) ve çift

ısıtmalı oda konseptine sahiptir. Üst oda bir fırın kısmı görevi görürken, alt oda, yapıları tavlama görevi görmektedir. Fırın kısmı yaklaşık 1038°C (1900°F) sıcaklıkta çalışmaktadır. Alüminyum oksit, zirkon oksit ve silisyum dioksit hammaddelerinin karışımından oluşan cam bileşeni eritilerek nozülden geçirir. Aynı zamanda bu cihaz, bir seferde tek bir mimari parça oluşturmak için yeterli malzemeyi depolama kapasitesine de sahiptir. Cam kaynağı için kullanılan bu özel bileşim, nispeten düşük yumuşama sıcaklığına ve tavlama noktalarına sahip olduğundan geniş bir çalışma aralığı sağlamaktadır. Bu tür bir cam bileşeni sanatsal cam üfleme alanında kolaylıklar sağladığı kadar üç boyutlu yazıcı kullanımında da avantajlar sağlamaktadır (Brun vd., 2017: 4). Erimiş cam bir ağızlıktan akarak cam objeyi oluşturmaktadır.

Proje, asırlık cam araçları ve sayısız potansiyel uygulamaya sahip yeni cam yapılar üreten teknolojilerle modern teknolojileri sentezlemektedir. Ancak; artan inşaat hacmi, daha büyük bir rezervuar, daha hızlı ve daha doğru baskı ve gerekli servisler arasında daha uzun çalışma süreleri ile endüstriyel ve mimari uygulamaların ölçeğini işlemek için sistem yeniden ele alınmış ve G3DP2 tasarlanmıştır. Yazıcı, termal olarak kontrol edilen üç bölgeden oluşur: erimiş camı sıvı tutmak için 1090°C'de tutan rezervuara, 800°C'de çalışan memeye ve 480°C'de tutulan yapı odasına sahiptir. Sistem yine diğer tüm FDM (kaynaşmış biriktirme modellemesi) üç boyutlu yazıcıları gibi çalışmaktadır.

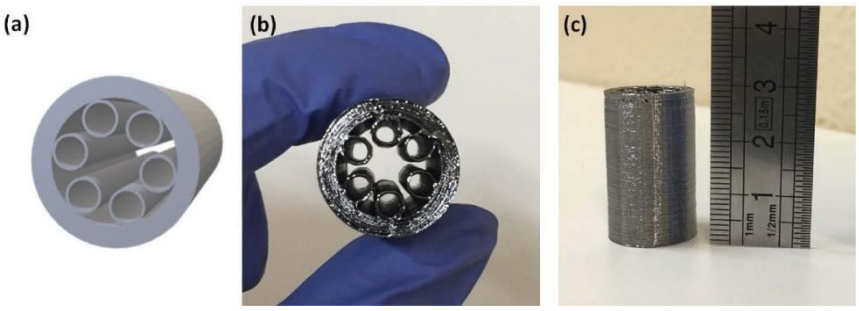
G3DP2, saatte 5 kg'ın üzerinde çıktı alabilmektedir. Hareket kontrolü geleneksel X, Y ve Z hareketini ve Z ekseni üzerinde tam dönüş olmak üzere dört ekseni kapsamaktadır, ancak bu hareketin kullanımını geliştirebilmek için daha fazla çalışma yapılması gerekmektedir (3ders, 2019). MIT Glass Lab'da üç boyutlu yazıcılar ile farklı formlarda cam çalışmalar üretilmiştir (Görsel 9).

Görsel 9. MIT Glass Lab, ABD

Ekibin çalışma hedeflerinden biri de üretime renkli cam ilave ederek baskılı cam yapıların optik ve estetik özelliklerini zenginleştirmektir. Yapılan ön testler, aynı cam formun üzerinde birden çok farklı renklerin katmanlar halinde basılabildiğini göstermiştir (Görsel 10) (Klein vd., 2015: 100).

Görsel 10. MIT Glass Lab, ABD

Bir diğer araştırma da katmanlı üretim doğrultusunda kalkojenit cam çubukların eritilerek içi boş form oluşturulması esasına dayanmaktadır (Görsel 11). Bu yöntemde plastik filamentlerle yaygın olarak kullanılan bir üç boyutlu yazıcı, yapılandırılmış fiber optik preformlar oluşturmak amacıyla kalkojenit cam çubukları kabul edecek şekilde modifiye edilmiştir (Carcreff vd., 2021: 199).



Görsel 11. Kalkojenit mikro yapılı bir optik fiberin (MOF) 3b yazıcı ile üretimi

Üç boyutlu baskıya uygun, düşük cam geçiş sıcaklığı (Tg) gösteren Te20As30Se50 (TAS) kalkojenit cam kullanılmıştır ve kalkojenit camlar uygun hammaddelerle ve belli yöntemlerle önceden hazırlanmıştır. TAS kalkojenit camın geçiş sıcaklığı 137 °C'dir. Bu düşük Tg sayesinde, 280 °C civarında 103-102 Pascal-Saniyelik (Pa.s) bir viskozite elde edilir ve bu erimiş filamentasyon imalatı (FFF/FDM) için mükemmel bir kıvamdır. Bu tür eklemeli üretim yaklaşımı, karmaşık tasarımlara sahip preformların, yüksek derecede tekrarlanabilirlik ve geometri doğruluğu ile birkaç saat içinde tek bir adımda üretilmesine izin vermektedir (Carcreff, vd. 2021: 198).

SONUÇ

Günümüzde üç boyutlu baskı teknolojileri, teknoloji ve tasarımı bir araya getiren bir kombinasyon olarak görülmektedir. Bu teknoloji artık sadece matematiksel hesaplamalar, yazılım mühendisliği veya makine mühendisliği ile ilgili bir iş değildir; aynı zamanda mekanik, tasarım ve yazılımın ortak bir ürünüdür. Bu çalışmada, yeni cam formları ve tasarımlarının oluşturulmasıyla ilgili olarak malzemeye dayalı dijital üretim hakkında yeni bilgiler elde etmek amacıyla bugüne kadar yayınlanan tüm üç boyutlu yazıcılar araştırılmış ve bulunan örnekler ele alınarak değerlendirilmiştir. Endüstriyel kullanıma yönelik dijital bir üretim yöntemi olarak tasarlanmış olan üç boyutlu yazıcılar, son yıllarda cam malzemeyi de üretim sürecine dahil ederek sektörel bir Ar-Ge alt yapısı geliştirme sürecine girdiği ve üç boyutlu yazıcılarla üretilen cam nesnelerin de henüz prototip aşamasında olduğu gözlenmiştir. Bu alanda çalışan birçok mühendis ve firma, bu teknolojiyi geliştirmek adına çalışmalar yaparak projeler üretmişler ve araştırmalarını sürdürmeye de devam etmektedirler.

Yapılan araştırma sonucunda cam üretimi yapan üç boyutlu yazıcıların kendi içinde farklı çalışma prensiplerine sahip oldukları görülmüştür. Her firma, kendi bünyesinde gerçekleştirdiği çalışmalar ve denemeler sonucunda farklı üretim yöntemlerini kullanmıştır. Üç boyutlu baskı teknolojileri ile karmaşık cam yapıları imal etmek için kullanılan bu yöntemler üretimde kullanılan malzeme ve üretim şekline göre; toz malzemenin sinterlenmesi, sıvı malzemenin lazer ile kürlenmesi, doğrudan mürekkeple yazma ve katı malzemenin eritilerek yığılması gibi dört ana grup altında toplanmıştır. Bununla birlikte, tüm bu yöntemlerin de kullanım alanları bakımından değişkenlik gösterdiği ve her birinin kendi içinde avantajları ve dezavantajlarının bulunduğu gözlenmiştir. Değişen üretim yöntemleri sayesinde ortaya konan ürünler de boyut, yapı ve görünüş bakımından birbirinden oldukça farklıdır. Kimi yazıcı mikro yapıda ürün çıkartırken, kimisi büyük ve katmanlı duvarları olan formlar çıkartmıştır. Çıkan ürünlerin bazıları saydam yapıya sahipken bazıları ise opak yapıdadır.

Her çalışma prensibinin sonucunda cam üretimi gerçekleştirilse de ortaya çıkan ürünler arasında, tasarım alanında kullanım açısından farklılık oluşmaktadır. Yığma yöntemi üretim biçiminin daha rahat olması açısından bir avantajken, detaylı bir yapıya sahip cam formların üretiminde sınırlı kalmaktadır. Diğer sinterleme yöntemlerinde ise her ne kadar detaylı formların kolay üretilebildiği görülse de çıkan cam formlar ya mikro yapıda ya da kırılgan ve opak yapıdadırlar. Dolayısıyla bu yöntemlerle elde edilen cam formların kimilerinin mikro yapıları, kimilerinin de kaba yapıları nedeniyle pek çok uygulamaya yatkın durumda olmadıkları ve cam ürün tasarımı oluşturmada yetersiz kaldıkları görülmektedir. Ancak her ne kadar üretimdeki hızı ve ortaya koyduğu çıktılar yetersiz kalsa da geleceğin teknolojik bir cam şekillendirme yöntemi

olacağı aşikârdır. Bu geliştirilen altyapı sayesinde, gelecek zamanda bu teknolojinin cam ürün tasarımı alanına adapte edilebileceği görülmektedir. Dahası alternatif bir şekillendirme yöntemi olarak değerlendirilerek elle şekillendirilmesi zor olan formların oluşturulmasında oldukça başarılı sonuçlar ortaya koyabilecektir. Bu nedenle yapılan çalışmalar ve araştırmalar doğrultusunda bu üç boyutlu yazıcı teknolojisi, cam tasarım alanına büyük katkılar sağlayarak; sadece bir üretim yöntemi olmanın ötesinde, bir tasarım felsefesi ve hatta yeni bir yaşam biçimi de sunacaktır. Aynı zamanda araştırma sonuçlarının da bu alana yönelik yapılan araştırmalara ve çalışmalara yön vermesi ve üç boyutlu cam yazıcı kullanımının artmasına katkı sağlaması beklenmektedir.

Authors' Contributions

There is a single author in this paper who contributed 100%.

Competing Interests

There is no potential conflict of interest.

Ethics Committee Declaration

Ethics committee approval is not required.

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